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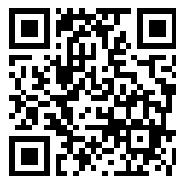
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STREINGER









GILBERT HART.

CHAS. A. STRELINGER

# WOOD WORKERS' TOOLS

BEING A CATALOGUE OF

## TOOLS, SUPPLIES, MACHINERY,

AND SIMILAR GOODS

USED BY

CARPENTERS, BUILDERS, CABINET MAKERS, PATTERN MAKERS,  
MILLWRIGHTS, CARVERS, SHIP CARPENTERS, INVENTORS.  
DRAUGHTSMEN, AND <sup>also</sup> ALL "WOOD BUTCHERS" NOT  
INCLUDED IN FOREGOING CLASSIFICATION.

AND IN

MANUFACTORIES, MILLS, MINES, ETC., ETC.



1897

CHAS. A. STRELINGER & CO.

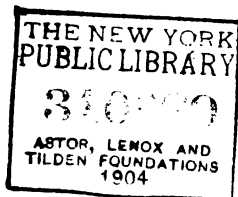
MANUFACTURERS AND DEALERS,

DETROIT, MICHIGAN, U. S. A.

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EXPECTING to receive a fair compensation, and without pretense of giving something for nothing, we tender our offices to those who appreciate careful and prompt service, and intelligent attention to details, believing that with our experience of thirty years in manufacturing and selling Tools, Supplies and Machinery, together with our large list of correspondents and desirable connections at the leading manufacturing and commercial centers, we can be of real service to all those who use or buy this class of goods.

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## THIS YEAR'S CATALOGUE.

**Jan. 28th, 1896.**

Please send me your 1896 catalogue. I have last year's edition (1895), and would like to have a new one.

P. M. ARMSTRONG, Dayton, Ohio.

To this party and others who may be like-minded, we beg to say that our 1895 catalogue is also our 1896-'97-'98, and perhaps, 1899 catalogue.

If we were selling Seeds and Plants, Ladies' Hats and Bonnets, Patent Medicines, etc., we would, doubtless, find it necessary to issue a new catalogue every year, but our goods are of a staple nature, changes are comparatively few, and we are not warranted in going to the expense of printing a new book every year.

April 1st, each year (oftener if necessary), we issue a Discount Sheet which contains Prices, Changes in Goods, Illustrations and Descriptions of New Tools and Machines, and a deal of additional information—more or less valuable—relating to Wood Workers' Tools, Machinery and Supplies.

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## WOOD WORKERS' TOOLS.

A casual glance at this book will reveal the fact, that it is in some ways novel, and different from the ordinary trade catalogue, but it may be well for us to call attention to some of its features.

**SIZE.**—For many years catalogues have been growing larger and larger, until things were getting to such a pass, that it became a grave question as to whether manufacturers would not have to put up special library buildings for trade catalogues.

In our judgment, the book that is to be constantly used should be small and compact. A small engraving well done is, in the majority of cases, just as useful for the purpose intended, as a large one, and there is no more need of showing a full size cut of a blacksmith's sledge than there is of showing a full size cut of a hundred foot tape line.

On account of its small size, this book can be kept on the desk and constantly referred to (this is what we like); or can be carried in the pocket, an especially useful feature when one goes out to estimate on work for which various tools and supplies may be required.

**PRICES.**—In printing our prices, we have made a radical departure from the time-honored custom of printing manufacturers' lists, which, in our judgment, are absolutely misleading, with their long string of discounts. The system of price-lists has become almost

a farce. One manufacturer prints a list price of \$1.50 on an article, another \$3.00 on a similar article, and a third \$4.50. The first allows a discount of 30 per cent, the second 60 and 7½ per cent, and the third 75 per cent. The difference in the lowest and highest list is 200 per cent, while the actual, or net difference in cost, is 7 per cent.

In regard to discounts, we may have something to say farther on.

**HEADLINES.**—We have refrained entirely from the use of big, black type and staring headlines. There are so many good things in this book, that if we undertook to emphasize their merits by bold-faced type, the pages would be as black as—.

**EXAGGERATIONS.**—The following "Stock" expressions are taken from the catalogues of different Chuck makers, nearly all of the different manufacturers being represented:

"Best made", "Best for the price", "Nothing better made", "Equal to the best", "Superior to all others," "Stronger than any other," "Simplest and strongest", "Durability and simplicity unequalled", "Greatest strength."

In our descriptions of the various goods throughout this book, we have carefully refrained from making "inflated" claims as to their merits. We sincerely hope that our frankness in this respect will not prejudice any one against their real quality.

**You Can Put  
it in Your  
Pocket.**

**Nice  
Collection of  
Adjectives,  
Isn't It?**



## TERMS.

To those known to us, and others with well established credits, our terms are thirty days from date of invoice. In all other cases, cash must accompany order.

It is often the case that individuals and small concerns may be perfectly good, and yet have only local credit. In such cases, we have no means of ascertaining their commercial standing, and so must insist that (unless references that are fully satisfactory to us can be given) orders must be accompanied by cash.

Our responsibility and commercial standing can easily be ascertained by referring to commercial agencies, banks or any large business house.

## SHIPPING DIRECTIONS.

In each instance we prefer to have shipping directions accompany the order, and we ship the goods in the manner directed. If, however, no shipping directions are given, we forward by Mail, Registered Mail, Express or Freight, as under the circumstances we think will be most satisfactory to the customer.

## C. O. D.

The practice of sending goods C. O. D. (collect on delivery) is—fortunately—growing less common. It entails extra expense both to the buyer and seller, and usually indicates distrust and suspicion. In these days it is not a difficult matter to ascertain the commercial standing of a business house.

To those desiring it, we will be glad to furnish ample evidences of the honesty, integrity, and commercial standing of our house.

Therefore—we will not send goods C. O. D.

## GOODS BY MAIL.

The rate of postage on articles sent by mail is one cent per ounce, and no package can be sent weighing over four pounds.

We will be pleased to give the weights of any mailable goods upon application.

Don't send the exact catalogue price on articles and then ask us to send them by mail; we receive hundreds of orders for small articles on which the postage ranges from two cents upwards; these come often from a distance and the postage would be a few cents, when the express charges would be five or ten times as much. We cannot afford to spend the time writing to our customers, asking them to remit us the postage on these goods, and we often have to suffer the loss of these few cents, which on thousands of orders, amounts to considerable; send what you think is right for postage and if there is any over we will return it.

## COMPLAINTS.

We make mistakes—more of them than we like to—and who doesn't? Complaints concerning mistakes or defects in goods should be made at once, and in plain language. Don't be mealy-mouthed about it. We try and take pains to have everything right and satisfactory to our customers, and when it is otherwise, we are more than willing to correct it.

## GOODS ON TRIAL.

We do not send our Machines, Tools, or any goods on trial. Everything sold is meant to be just as represented, and if by any chance it should prove otherwise, we are just as anxious to get the goods back and replace with others, or refund the money, as our customers are to have us do so. This may seem a little queer, but it's a fact.

### DESTROY FORMER CATALOGUES.

In issuing this catalogue, we cancel all prices and lists given in previous catalogues of Wood Workers' Tools. Any and all discounts heretofore quoted from list prices in former catalogues are cancelled.

All prices and discounts are subject to change without notice.

### SUBSTITUTION.

We seldom substitute other articles for those ordered. There are times when, in our judgment, it seems best to do this. If for any reason, we send other goods than those called for, it is distinctly understood that the change or substitution is *at our own risk*, and that we will pay all expense of changing if the goods thus substituted are not satisfactory.

### SAME AS LAST.

Please do not order goods "Same as last". In fact, as far as possible, reference to former letters or orders should be avoided. We receive so many, that compliance with a request of this kind involves much trouble and loss of time. Every letter should be explicit and complete in itself.

Itemize and specify articles as clearly and distinctly as possible. Orders are sometimes delayed for days, because customers fail to specify plainly what they want. It also assists us greatly in getting out orders, if a plain, straight list of the goods wanted accompanies order. We receive many orders in which customers name two or three items wanted, then ask a question or two, then a few more items, and then questions, and so on.

### OUR ASSISTANCE.

We have, in a number of places throughout this book, stated our willingness to be of service to our customers and would-be customers. Our efforts in this direction are often hindered by reason of the meagre details furnished us to advise in a general way, but we cannot always know the conditions that obtain, with different users, and this in many cases has everything to do with the proper selection of a tool or machine.

If you know all about it, there is no need of asking us; but if you don't, and want us to try and help you, why, tell enough to enable us to judge intelligently.

### DEPOSIT ACCOUNTS.

Many of our customers requiring tools and other goods, from time to time, find it inconvenient and annoying to have to procure Post Office or Express Money Orders, or to Register Letters, besides being quite an expense when the orders are frequent. Customers may save themselves trouble and expense by taking advantage of our DEPOSIT ACCOUNT system. Any amount (not less than \$5.00) may be deposited with us, and this amount will be placed to the account opened in the name of the customer. Orders will be executed to the extent of the amount standing to the customer's credit, and a fresh deposit may be made when the credit is exhausted. Interest at the rate of 5 per cent per annum will be allowed upon the monthly balance of such deposits.

Statement of account will be rendered when desired, and any balance remaining with us will be returned immediately when applied for.

IT ALMOST MADE US BLUSH.

We have, in another portion of this catalogue, expressed our opinion in regard to testimonial letters, and did not expect to print any, but the letter reproduced here is so much out of the common, that we trust we may be forgiven for slightly overstepping the bounds of modesty.

NEW ORLEANS, La.

Jan 14th, 1897.

CHAS. A. STRELINGER & Co.,  
Detroit, Mich.

Dear Sirs:—Desiring some goods in your line, and having never traded with your house, we made inquiries of the Buchel Machine Works, of this city, whom we knew were customers of yours. We enclose you their unique and decidedly complimentary letter in reply to our inquiry.

We thought you might enjoy this. You will hear from us later on in regard to the goods we require.

Yours truly,  
THE MCARDLE & ST. CLAIR  
MFG. Co.

J. BUCHEL, P. & S.

ESTABLISHED 1834.

E. F. BUCHEL.

## THE BUCHEL MACHINE WORKS

Designers and Builders of Fine Machinery.

OFFICE AND WORKS,  
Nos. 101 & 103 CONTI STREET,  
NEW ORLEANS, LA.

HIGH GRADE MACHINE WORK OF EVERY DESCRIPTION.

### MEMORANDUM

In your reply please quote this number 1401

January 11th, 1897.

The McArdle & Sinclair Mfg. Co.

City.

Gentlemen:—Your esteemed favor of even date, in which you make inquiry about Messrs. Chas. A. Strelinger & Co., is at hand.

It gives us pleasure to say that we have been doing business with this firm for the past nine years, and have found them uniformly courteous, prompt and conscientious to an unusual degree.

We do not hesitate to say that they are the most up-to-date Tool, Supply and Machinery dealers in this country. They rank among the very few that thoroughly understand the size, shape, quality and use of the goods they sell, and who apply plenty of "Common Sense" as a lubricant to their business. In fact, we have good reasons for believing that they make a study of their business in a manner that does not permit of classifying them as mere buyers and sellers.

Just get a copy of their "Encyclopedia", improperly called "A Book of Tools", and be convinced that they are over fifteen years old, and know the difference between a twist drill and a keg of nails.

We cannot say more for want of space, and beg to remain,

Very Respectfully,  
The Buchel Machine Works.

per J. Buchel.

## QUALITY ! PRICES ! SERVICE !

In purchasing goods, there are three important things to consider—Quality, Prices, and Service. The first should be High, the second Low, and the third Good—at least that would be an ideal way to have it; but what is ideal is not always practicable. We get so used to seeing advertisements like this—

“Highest Quality”,  
“Lowest Prices”,  
“Best Service”,

that it sometimes seems as if it were quite an easy matter to fulfill the requirements called for by such statements, but it isn't.

### QUALITY.

In nearly all cases, the question of Quality is an important one. People are apt to confound Quality with Grade or Class; we do, ourselves, oftentimes. Let us illustrate with an article outside of our line:

Java coffees are high grade, Maracaibo medium grade, and Rio and Santos low grade, but there are several qualities in each grade; and one must pay 35 to 40 cents per pound for the highest quality Java, while an inferior quality may be bought for 25 cents.

If such a thing were possible, we would like to handle nothing but the highest grade goods, but in a general line this is impossible. There must be variety, in accord with customers requirements and their means.

All goods we handle are of the highest quality we can obtain in the various lines. If a medium grade machine, it

will be the best machine that we know of, in its class. If a low grade Babbitt metal, it will be the best low grade metal we can obtain. We never, knowingly, misrepresent Grades or Qualities.

### PRICES.

The question of Prices is always an important one. Many dealers dispose of this question very easily, by simply making the statement, “Our Prices are always the lowest”.

It is rather an unpleasant subject to tackle. If—especially after what we have said in the foregoing article about Quality—we should say that our prices are always the lowest, any intelligent person over eight years of age, would suspect, with good reason, that we were lying. On the other hand, if we should say that our Prices were the highest, and people believed us, what sort of an advertisement would that be for us?

We, therefore, content ourselves by simply stating that, quality considered, we believe our prices will compare favorably with those of other houses.

### GOOD SERVICE.

In all cases, the question of Good Service is a most important one, and we sometimes think it is harder to attain, than either high quality or low prices. Good Service with us means a great deal; among other things it means careful attention, promptness, and helpfulness.



## OUR GUARANTEE.

Our guarantee as to the quality of goods sent out is ample and comprehensive. All articles we sell are, in our judgment, absolutely the best in their respective classes. All of our old customers depend largely upon our judgment, and new customers soon learn to do the same. We have a very well defined idea that when a customer purchases goods he ought to get what he pays for.

**THEREFORE**—What we mean by warranting goods is this—that if they are not as represented in all particulars, they may be returned to us at **OUR EXPENSE**, and we will replace them with others, or if desired, will *refund the price paid*. We must insist, however, upon customers always notifying us before goods are sent back.

## WHAT IS A WARRANTY?

The words "Warrant" and "Guarantee" are so frequently and so commonly used in business circles, that they have almost—if not quite—lost their original intent and value. A warrant is in the nature of a personal contract, but in a large majority of ordinary business transactions it is in the form of an unwritten and unsigned contract. This being the case, either side can break the contract without being legally liable. Putting aside the question of legal responsibility, however, it must be conceded that the ordinary commercial warrant as usually understood rests on a basis of business integrity, and when the whole matter is boiled down it becomes a question of honesty, fairness and common sense.

## POSITIVE, AFFIRMATIVE, NEGATIVE.

Guarantees may be divided into three classes. For our purpose we will designate these as the Positive, the Affirmative and the Negative Guarantee.

**THE POSITIVE GUARANTEE MEANS EVERYTHING.** We cannot explain it in any better way than by stating that our Guarantee at the beginning of this article is a Positive Guarantee.

**THE AFFIRMATIVE GUARANTEE MEANS SOMETHING.** To explain this we copy the following warranty from

the catalogue of one of the oldest and best known makers of edge tools. It is a form of guarantee quite generally used.

## WARRANTY.

(I) All tools warranted free from flaws and not soft.

(II) When defective and returned to the dealer without expense, within thirty days from date of purchase, we will replace with other goods.

(III) Tools showing evidence of long usage, or injured by misuse, are not covered by this warrant.

The above is a good example of the form of warrant used by tool makers generally. We do not think, however, that this form of guarantee is entirely fair to the user, for the following reasons:

Clause "I" refers to "flaws and softness." A tool that is burnt or is so hard as to make it practically useless is, in our judgment, defective, and the purchaser has a right to expect a new one just as much as if the tool were too soft.

Clause "II" says, "Returned to us without expense." If the maker or dealer sends out faulty tools, we do not think the user should be compelled to pay all the expense of changing. It is burdensome and unfair, and, in our judgment, the maker or dealer should pay at least one-half this expense. Clause "II" says again that tools should be returned within thirty days from date of purchase; this is not always practicable.

Clause "III" we think is all right.

The **NEGATIVE GUARANTEE**, as the name implies, **MEANS NOTHING.** Its promises are ample, its fulfillments *nil*. In print the Negative Guarantee looks just about as attractive and as honest as the others. It usually accompanies cheap goods at cheap prices, but quite often it will be found in a combination of cheap goods at high prices. People are often fooled into buying goods under this guarantee. There is no need of this if a little common sense is used; a *warranted* steel hammer at 25 cents, a *warranted* 100 ft. tape line at 50 cents, a *warranted* pair of 5 inch plyers at 15 cents, or a *warranted* 5 horse power engine and boiler at \$100.00 cannot be expected to be in any sense first-class goods. And a man who buys anything on these lines deserves to be fooled.

## VARIETY.

Some of our readers, after going over this book with more or less care, may be impressed with the idea that we have tried to show as many different articles as possible, but such is far from being the case; on the contrary, we have aimed to show as limited lines as possible consistent with a complete variety.

Those of our customers who have had copies of former catalogues, will notice that, while this catalogue is much more complete than any before printed (by ourselves or any one else), many of the articles formerly shown have been dispensed with.

We will explain as briefly as possible, why some tools are left out, and why others are put in.

**WHY SOME ARE LEFT OUT**—To illustrate this question, we take for our subject Car Bits. In former catalogues were shown the following brands or styles: "Snell", "Ives", "Russell Jennings", "Jennings' Pattern", "Irwin", "Pugh", "D. M. K.", "Cooks", "Lewis", "Bailey," and "Ship Auger".

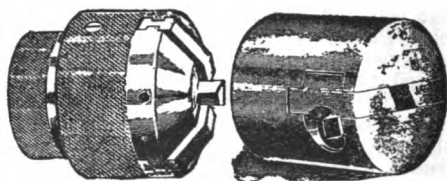
The "Snell", "Ives", "Jennings' Pattern" and "Irwin" are omitted, because they are almost as high in price as the three which we show, and we do not believe that they are nearly as good. The "Bailey" and "Lewis" are no longer made. The "Cook", while useful for some few kinds of work, is so little called for, that it does not pay us to keep them. The "Pugh" and "D. M. K." (or "Arrow Brand") are fine Bits, but the prices are very high, and we do not think they are worth the difference.

In this catalogue are shown (on page 697) the "Ford", "Ship Auger", and

genuine "Russell Jennings" Car Bits. In these Bits are combined every valuable quality, and the work for which either one or the other is not suited must be peculiar indeed.

**WHY SOME ARE PUT IN**—To illustrate this, we will take Drill Chucks. This catalogue is for Wood Workers, and wood workers do not use as many chucks as Metal workers, in fact, as a rule, wood workers know very little about Chucks. In "A Book of Tools" (our Metal Workers' Catalogue), we illustrate and describe eleven styles and thirty-five sizes (we carry in stock six other styles and twenty-two sizes) but Wood Workers' requirements are not so varied, nor as exacting, and we are satisfied that the three styles shown from Fig. 3946 to 3948, in this book, will cover the ground.

First, for those who can't afford a first-class Chuck—and others who think they can't—we must have a low-priced Chuck, that is as good as a low-priced Chuck can be. Our choice lies between



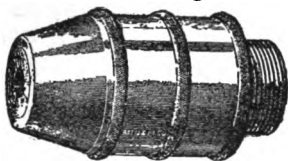
ACME

BLACKSMITHS.

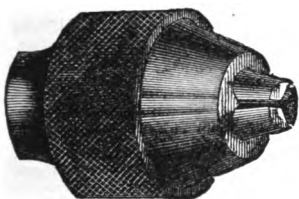
the "Black Smiths" and "Acme". The "Blacksmiths" is strong and durable, but is roughly made and too heavy, so the "Acme" is selected

Second, we must have a Chuck for fine work, where the boring is to be very accurate, in cases where large numbers of small bits are used, and especially where Chuck is used on horizontal boring machines that have small spindles, and a heavy Chuck would soon

wear the spindles and bearings out of true. The "Beach" is undoubtedly the finest Chuck made. It is a Tool-makers' Chuck, and will carry a drill exact within one-thousandth of an inch, but this refinement isn't called for in Wood



BEACH.

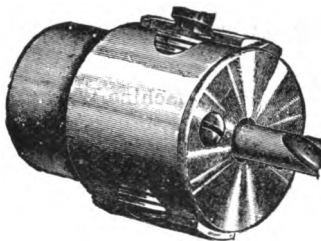


ALMOND.

Working. The Beach Chuck is 40 per cent higher in price than the "Almond," and as the "Almond" is a fine, first-class Chuck, at a reasonable price, it is selected as being the best in its class.

Third, we must have a Chuck that is accurate, and at the same time strong and durable, so that apprentice boys and cheap labor won't knock it out "in the first round", in short, the best Chuck for all around work.

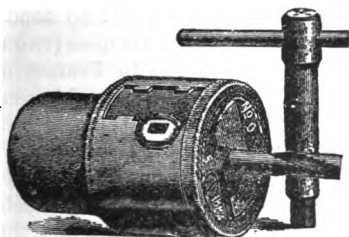
Of this type there are many different makes, among them the "Little Giant",



FLOWER.

as good a Chuck in every way as the "Little Giant", and as the "Little Giant" costs about 25 per cent more, we select the other.

TO SUM UP.—We might take up nearly every line in this book in the same manner as above, and there are doubtless a few who would be interested in reading the details, but the above examples will suffice to illustrate why "Some Are Left Out" and "Some Are Put In", and may convince the reader that we have good reasons both for leaving out certain articles and for putting others in. Also that every item in this catalogue has been well considered, and nothing has been put in to swell the size of the book, or "Just for fun".



LITTLE GIANT.

"Reid", "Pratt's Improved", "Hartford", "Standard", "Empire", "Union", "Horton" and "Flower", every one of them good. The "Little Giant" is the best known. The "Flower" is comparatively new on the market, but it is just

## INSURANCE.

The way to be absolutely sure that your insurance policy covers what it is supposed to cover, is to have each separate machine and tool mentioned in the policy, also a correct plan of the mill at the time the policy is written. Bunching different pieces under such terms as "tools" or "machines" generally leads to a dispute after a fire. Have the policy so plain that there can be no misunderstanding. Have it cover, absolutely, each building, machine, tool, belt, shaft, hanger, etc., on which you expect to recover if the mill burns.

## HOW WE AND YOU BUY.

In the Buchel Machine Works' letter shown on page 611, occur these paragraphs:

"They rank among the very few that thoroughly understand size, shape, quality and use of the goods they sell."

"In fact, we have good reasons for believing that they make a study of their business in a manner that does not permit of classifying them as mere buyers and sellers."

The above compliments are valued by us, because they are unique and very different from the usual form of testimonial.

And they are none the less appreciated by reason of their coming to us in an indirect way. We trust that we will not be misunderstood when we say that we believe they are deserved.

We have been repeatedly told by manufacturers and their representatives, that there is no concern in the country that takes as much pains, or spends as much time and money in looking up the **QUALITY** of goods as we.

It seems to us that it may be of interest to some of our readers if we describe briefly our methods of selecting some of the goods we sell.\*

We might state that we are in a most excellent position as regards opportunities and advantages for testing the qualities of the various articles, as we use in our own shops large quantities of the goods shown in this catalogue, in fact more than 50 per cent of the articles shown in our various catalogues are used either constantly or from time to time in our own shops.

In going into this matter, we are

---

\*This does not refer to any of the lines which are manufactured by us, and which are always the best we know how to produce, as those form a comparatively small percentage of our sales (less than 25 per cent).

somewhat hampered by the great diversity of subjects. The line is so large and varied that it is somewhat of a problem to pick out any special object as an illustration. Our difficulties in this respect will surely be appreciated by any one who will take the pains to look through our catalogues.

The idea was that the objects selected should be quite different in character, and after much thought we take as our subjects **WOOD WORKERS' VISES** and **GAS ENGINES**, these two being about as far apart as could well be imagined.

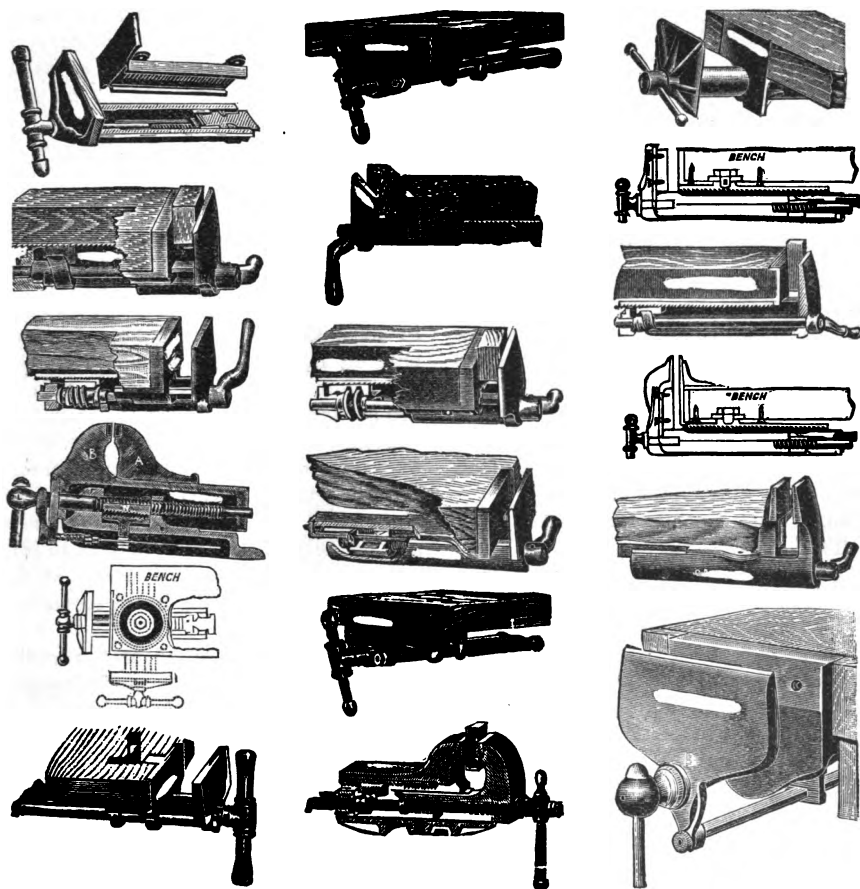
### WOOD WORKERS' VISES—

The Quick-Acting Wood Workers' Vise is of comparatively recent origin. On page 786 we illustrate several styles, stating some of the advantages. What we have written need not be repeated here.

The first thing in buying is to find out what there is in the market, and this we proceed to do. We find that there are eighteen different styles (see next page). We have on hand four out of the eighteen. There are five others that we have sold and used and know all about. The remaining nine we know practically nothing of, and so send to the manufacturers for samples (two are made in England, one in France, and one in Germany). After a thorough examination, we divide them into two groups. In the first we place such as are, in our judgment, superior in principles of construction and workmanship.

From this group we select the three that are the best (without reference to price). Each of these has a point or two of minor advantage over the other.

If prices are alike, there really will be no choice, but we find that one is nearly 20 per cent lower in price than either of the others. In this particular



case the reason for the lower price lies in a simpler construction, which in no way sacrifices any of the essential features.

This, then is the Vise selected, and is shown on pages 786 and 787 of our catalogue, "Wood Workers' Tools."

Now, we take up the second group. We would rather sell the best Vises, but prices—and other conditions as well—have to be considered. In this group we find some that are excellent in principles of construction, but the workmanship does not compare favorably with those in the first group. The

parts instead of being machined and well fitted, are in most cases ground, or roughly filed. We might, however, say—in passing—that almost any of these in the second group are preferable to the ordinary wood or iron screw bench Vise. Of course, all the manufacturers claim their goods to be first-class, and in some cases the prices are quite as high as those asked for the first-class Vises. All things considered, the Norbourn Vise is our choice for second place, and this we illustrate and price on page 787.

## "HOW WE AND YOU BUY."

(Continued from page 17.)

### GAS ENGINES—

(This article includes Engines, in which the fuel used is Illuminating Gas, Natural Gas, Producer Gas, or Gasoline direct from the tank. The three first named are used under like conditions, while the Gasoline Engine requires a slight change. The change from one to the other can usually be made in less than an hour's time.)

Before going into the details of "How We Buy" Gas Engines, we beg to call the reader's attention to the dozen reproductions of Gas Engine advertisements shown on opposite page. The originals were taken from the columns of two or three mechanical journals.

From these advertisements we glean that out of the twelve makers

Four make the "Best" engine,

Two the "Simplest" engine,

Two are "Unequaled",

Two are the "Lightest",

Two are "Twentieth Century" engines, and

One is the "Engine of the Future".

(This advertiser fails to state in what century his "Future" comes.)

Two are the "Most Economical". Strangely enough, only one of the lot claims to have the "Cheapest" engine.

As advertising in these journals costs from 25 cents to \$1.00 per line, many makers are of necessity compelled to "Cut short" a great many claims of advantage, and invite the reader to "Send for catalogue\*".

Our Gas Engine experience extends over a period of many years. As long ago as 1885, we came to the conclusion that the Gas Engine was a success, and for small plants was the coming power.

\*We would like to say right here that of the five or six engines that upon investigation proved to be first-class, in no case did we find the language used in describing these Engines either boastful or extravagant, nor did we find in any case the manufacturers bolstering up the quality of their product by running down the Engines made by others.

At that time, however, and for many years afterwards, the manufacture of Gas Engines was in the hands of a few parties who controlled important patents, and who—rather unwisely we think—maintained so high a price, as to quite place them beyond the reach of purchasers whose means were but moderate, although in many instances the economical value was sufficient to warrant paying the large prices asked.

Upon the expiration of these patents in 1888, the field being open, many entered it, the number being swelled from time to time until at present there are perhaps not less than 150 concerns engaged to a greater or less extent in experimenting, in making, or in manufacturing Gas Engines. The results of the efforts thus expended have been—and are being—shown constantly in improvements, both in design and workmanship, and especially in the lessening of cost to the user.

An engine that eight or ten years ago cost the user \$1000.00, can be bought to-day for \$500.00, and if the buyer exercises good judgment and ordinary care, he will get an engine that is in all ways very much better than the ones built then. We believe it is reasonably certain that the prices will continue to decline, from time to time, although we can not hope for so great a difference as that mentioned above.†

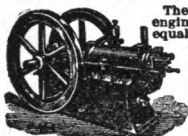
But this is digressing, and we must

†We might suggest that it would hardly pay any one who is in need of an Engine to follow the example of a customer of ours. This party runs a small grist mill, which requires about 20 H. P. He is using a 60 H. P. Boiler, and an old-fashioned 40 H. P. Slide Valve Engine. His coal bill averages \$70.00 per month, his engineer \$40.00, making a total expense of \$110 per month. A 20 H. P. Gas Engine using natural gas (which he can easily obtain) could be run at an expense of not to exceed \$30.00 per month. The reason he gave us for not buying the Engine was on account of the cost. It is nearly a year since he first began to talk Gas Engine, and since that time he has paid out in extra expense somewhat more than a 20 H. P. Gas Engine would have cost him set up ready to run.

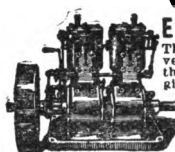
F. S.—This is hardly good economy.

**Gas and Gasoline Engine.**

The simplest gas and gasoline engine on the market. Has no equal for absolute, steady speed and durability. It is a dwarf in size and a Samson in strength. Catalogue sent on application.

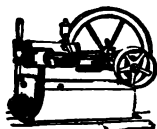
**GAS AND GASOLINE ENGINES, STATIONARY and MARINE.**

The is the only reversible Marine Gas Engine on the market. It is the lightest engine for its power. Requires no licensed engineer. Absolutely safe. Manufact'd by

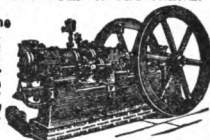
**GASOLINE ENGINE**

is used for almost every purpose power is applied to under the sun, and is unequalled.

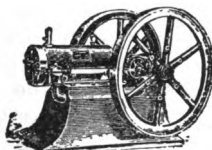
Full particulars by addressing

**The Long-Sought-For Found at Last**  
AN IMPULSE WITH EVERY TURN OF THE CRANK.**Gas and Gasoline Engine**

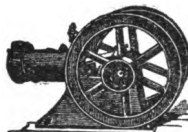
The Engine of the future. This engine will run steadily and reliably as the best automatic steam engine, and much better than the ordinary single cylinder Catalogue free.

**Gas or Gasoline Engines.**

Simplest and best Has fewer parts than any Gas Engine built Can refer to customers who first tried other makes that were failures and then purchased the

**WANT POWER?**

The Gas and Gasoline Engine is the best and most economical. Address,

**POWER?**

Fifty per cent. increase at no additional expense

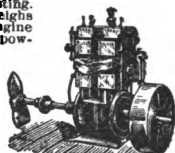
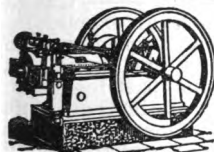
**THE GASOLINE ENGINES.**  
Emphatically the Twentieth Century Gas Engine

Send stamp for Catalogue

**THE IMPROVED GAS ENGINE.**

Two cylinders in one casting. Occupies less space and weighs less for its power than any engine made. Can be used wherever power is required. Either stationary or marine. No fire. No heat. No smoke. No licensed engineer required.

Send for catalogue.

**GAS AND GASOLINE ENGINES**

Using Natural Gas, Coal Gas, Producer Gas and Gasoline direct from the tank, 1 to 40 H. P. Interesting Catalogue.

**Electro-Gasoline Engine.**

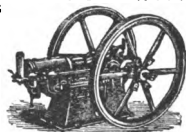
When you buy an Engine buy the best.  
It costs a few cents to write to us  
— It saves you several hundred to hear from us.

**POWER? POWER?? POWER!!!**

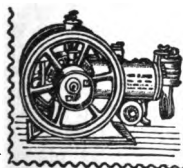
Fifty per cent. increase at no additional expense.

**Engine.**  
Emphatically the Twentieth Century Gas Engine.

Send stamp for catalogue "A"

**GAS and OIL Engines**

The Engines surpass all others in reliability, durability & economy; patented in all countries.



get back to our original proposition, "How We Buy Gas Engines". If we could follow the plan suggested by the first portion of this article, in buying Wood Workers' Vises, it would be comparatively inexpensive. There are but 18 styles of Wood Workers' Vises, and the total cost of buying a sample of each, together with freight and other expenses, is less than \$100.00. There are five times as many Gas Engines as there are Vises, and the cost of a medium sized engine is from fifty to one hundred times greater than the cost of a Vise, so that the buying of sample Engines is quite out of the question.

Therefore, instead of having the Engines come to us, we must go to the Engines. It isn't sufficient that we go to the places where Engines are made. In a Gas Engine factory we find engines running under the most favorable conditions, operated by men who know all the points of the Engine.

As the Engines we sell are to be used for all sorts of purposes, and under all sorts of conditions, we must—as far as possible—ascertain how successfully an Engine works under these different conditions, and so we are led in the course of our investigations into machine shops, flour mills, nickel plating plants, printing offices, bakeries, farms, in fact in the direction of all industries requiring power. In some cases we have written upwards of thirty letters to the various users of some particular make of Engine.

About four years ago, after going into the matter as thoroughly as we could, we selected a line of Gas Engines, and since then have sold this line.

There are at present over one hundred different Engines made, but, in our judgment, there are not more than five or six makers whose product is strictly first-class. The Engines we sell are

made by one of these five or six. The other four or five Engines we are not—for obvious reasons—saying anything about.

If any one chooses to enquire of us about any make of Gas Engine (and will enclose a self-addressed stamped envelope for reply), we will be pleased to tell them what we know about that particular Engine, or tell them if we don't know.

Realizing the importance of the Gas Engine question, we have never ceased our efforts to learn more about them, and in the past four months our engineer has visited seven Gas Engine shops, located in five different cities. Our engineer isn't an "Expert" and does not pose as such. He has served an apprenticeship in one of the largest steam engine shops in the country, has sold and used steam and gas engines for many years, and has, we believe, plenty of good, every-day common sense. We print here a letter received from him, which was written from a city nearly one thousand miles distant, where he had gone for the purpose of investigating a certain make of Gas Engines. The maker of these Engines claimed to have something in the way of an Engine that was superior to all others.

"To-day I visited the —— Gas Engine Co., made a thorough examination of the Engine, and an inspection of the shop, its tools and appliances. At different times in the past few days I have made inquiries of different parties who have these Engines in use, and have inspected a number of them.

The —— is a good Engine, but it along with most of the others has its faults. I mailed you the catalogue, and you will see from cuts that the Engine is of neat design. The Engines are well and substantially built, have large crank shafts and liberal bearing surfaces, and the workmanship is "A1". It has no special features to place it above other makes, that I could see.



Some of the features I did not like were:

First, while their catalogue states that they can furnish electric igniter, they do not recommend it, but strongly advise the use of the tube as being more satisfactory. The fact of the matter is, their electric igniting device is not satisfactory.

Second, they depend wholly upon the suction to open the inlet (gasoline valve), its own weight closing it on the compression stroke. The valve can be regulated as to its opening, but to change it the air chamber must be removed. This valve would be at a disadvantage in a cold climate, as it would be likely to freeze to the seat, there being always a certain amount of moisture in and around the air chamber. One or two drops of water should they freeze to the needle point of valve, would necessitate thawing out before the suction could open valve; also the gasoline supply is partly regulated by a Globe Valve.

Third, they have no water chamber around the exhaust valve, yet the catalogue says they have.

Fourth, the pin in the piston is a driven fit, and I heard of two cases where the piston was cracked by the expansion of pin.

Fifth, practically speaking, there are no take-ups or adjustments to the bearings.

Sixth, the connecting rod is too light, and the straps are separate—that is—the rod screws into them and is fastened with lock-nuts. This certainly is no advantage, and is not as strong as where the rods and straps are one solid forging.

The Valves, Valve Rods and Governor are similar to those on the — engine which I wrote you about last week, and are operated nearly the same, excepting that the others are better and more simple, as they use a plain eccentric, while this Engine has four gear wheels, a loose roller being fastened to the large gear; every second stroke comes in contact with the boss operating valve rods.

These people get high prices; in fact, higher than any of the five last makes I have written about.

In conclusion, I might as well say that there is hardly any use in our considering the matter favorably as far as this Engine is concerned.

FINIS.

Although this article is headed "How We And You Buy", we have confined our remarks to but one side of the question—that is—"How We Buy".

You see, we know how *we* buy, but don't know much about how *you* buy. There are so many of you and you have so many ways of buying, that we will conclude by suggesting that you put your way of buying along-side of ours, and then judge as to whether it won't pay to let us do a portion of your buying for you.

In the case of Wood Workers' Vises, it has cost us considerable in time and money to ascertain the best Vise at the lowest cost. In investigating the subject of Gas Engines, we have spent hundreds of dollars. This same may be said of everything we sell, and this experience, which has cost us so much in time and money, we offer to our customers, believing that in nearly all cases it will be to their advantage to "Reap where we have Sown".

M. M. AND P. A.

Many large Manufacturing Establishments, as well as all Railroads, have a Master Mechanic and a Purchasing Agent. They are not luxuries, but expensive necessities such as cannot be afforded by owners of medium and small sized shops.

In our Catalogue you have both the Master Mechanic and the Purchasing Agent, and the best part of it is they draw no salaries, and are at your service day or night.

## SECOND-HAND MACHINERY.

### POINTERS ABOUT SECOND-HAND MACHINERY.

**Pointers  
about  
Second-Hand  
Machinery.**

"While it is one of the most risky things in the business to make a wise selection in second-hand machinery, valuable points

may nevertheless be gained from the study of the stock of a large number of second-hand dealers. It is possible that all firms who use good machines are not prosperous, but it is a noteworthy fact that most all prosperous firms use good machines. The second-hand dealer's stock is mostly derived from unfortunates in business, and this class is noted for poor judgment of tools; poor tools are too often the cause of their downfall. One good recommendation of a machine is the fact that you can seldom or never find it in a second-hand dealer's stock. If he should get hold of it he can sell it immediately,

**Good Tools  
Go Quick.**

but, as a rule, it is bought up before he can get it.

Ask a well-posted second-hand dealer to tell you the names of the makers whose machines are rarely in his possession, and you will find that these are famed for the excellence of their productions."

The above article, found in a mechanical journal, is both sensible and suggestive.

We do not handle SECOND-HAND MACHINERY.

**Very  
Ambiguous.**

The terms used by second hand tool dealers in classifying Machinery and Tools are something like

this: "GOOD AS NEW", "A-1 CONDITION", "IN PERFECT ORDER", "IN FAIR CONDITION."

We never saw an announcement of Second-hand tools in which any tool was named as being worse than the last term, "In Fair Condition," and yet we have seen in second-hand stocks, many tools that this term would flatter highly.

Very much depends on what the quality of the tool was when new, and what sort of usage it may have had. We would rather have a machine made by a concern of high reputation, that had been used carefully for five years, than a new tool of many of the second and third-class makes.

During the past eight or ten years there has been greater progress made in the perfecting and development of Machine Tools than ever before. Wide-awake manufacturers have seen the great advantages of putting in improved machines, and this has resulted in placing upon the market hundreds of "back-number" tools and machines.

There is one piece of advice we would give to prospective buyers of Second-Hand Machinery, and that is, NEVER BUY SECOND-HAND MACHINERY OR TOOLS UNLESS YOU CAN SEE OR INSPECT THEM.

If the Machines or Tools are of too small importance, as regards amount invested, to pay for the expense of an investigation, it is better to pay a little more, and buy new machines of a reputable dealer who will fully guarantee them.

If the Machines or Tools are larger, therefore of greater importance, it is unwise to take chances, and the time and money spent in investigation will be well repaid.

## SQUARE HOLE TOOLS.

## SQUARE HOLE BIT.

For many years attempts have been made to produce a bit or tool that would bore a square hole. Very few of these tools have been successful. We remember seeing, a few years ago, a bit that appeared to do this work very nicely. It was made in New Hampshire, but it has never been completed and placed on the market. Besides, the price was so high as to take it out of the reach of the average mechanic.

The Bit shown here is modeled after the Hollow Chisel and Bit shown on page 915; this type of Bit having been used successfully as a machine bit for ten or fifteen years. This Bit bores square holes in the same motion as the brace in boring ordinary round ones, and will be found useful for mortising for Locks, Sash Pulleys, and other hardware trimmings. It is not intended for use in hickory, oak, or any of the hard woods.

## PRICES.

Size.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$
Each.....	\$1.25	\$1.35	\$1.45
Size.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Each.....	\$1.50	\$1.60	\$1.65

FIG. 3013. Size.....	$\frac{1}{2}$	$\frac{1}{2}$	1 in.
Each.....	\$1.75	\$2.50	\$2.75

At the time of writing, the  $\frac{1}{2}$  and 1 inch sizes are not ready for the market; we expect to have them soon.



FIG. 3013. SQUARE HOLE SAW.

For many purposes this Saw will be found very convenient. The length of blade over all is  $14\frac{1}{2}$  in.; length of cut, 12 in.; length of side or corner cut, 5

in.; width of blade,  $1\frac{1}{2}$  in.; width of side blade,  $\frac{1}{2}$  in.

Price complete, \$0.65; postage, 12 cts. Handle and Screws, 15 cents. Extra Blades, 50 cts.

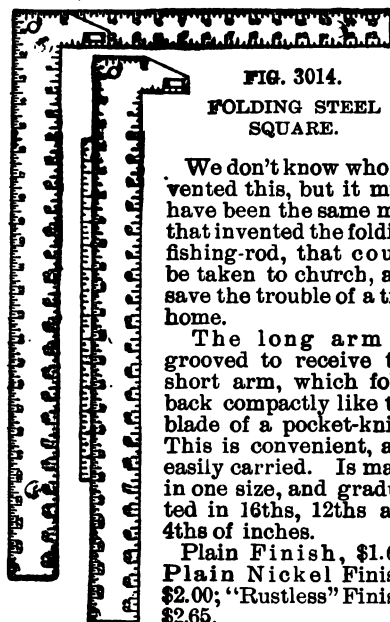


FIG. 3014.

## FOLDING STEEL SQUARE.

We don't know who invented this, but it must have been the same man that invented the folding fishing-rod, that could be taken to church, and save the trouble of a trip home.

The long arm is grooved to receive the short arm, which folds back compactly like the blade of a pocket-knife. This is convenient, and easily carried. Is made in one size, and graduated in 16ths, 12ths and 4ths of inches.

Plain Finish, \$1.65; Plain Nickel Finish, \$2.00; "Rustless" Finish, \$2.65.



FIG. 3015. WOOD RIM TOOL.

Used for drilling and counterboring Bicycle Rims. Price, \$0.75.

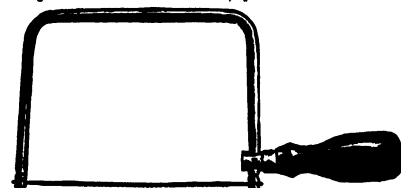


FIG. 3016. COPING SAW.

Cheaper than Fig. 3534, and in some ways better, as the blade can be turned. Blades 6 in.; 4 in. under back. Price, with 12 Blades, \$0.40; Extra Blades, per doz., 15 cents.

## BORING TOOLS.

This is not the proper place to show these tools, but for reasons which we haven't the time or space to relate, they were left out in the place where they belong—with the other Boring Tools.

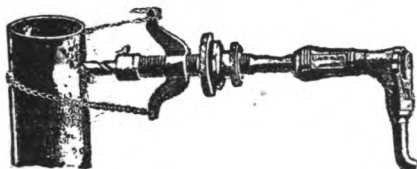


FIG. 3017. DRILLING ATTACHMENT.

This is comparatively new, and has met with great favor. Can be used in connection with any brace or breast drill. Has an automatic feeding device, requiring no pressure by the operator. Any thickness of metal can be easily drilled. There are many times when the convenient and labor-saving qualities of this tool will pay its cost in almost no time.

No. 9, \$2.25, with Brace Chuck suitable for holding any size square shank bits or drills.

No. 7, \$1.50 (see cut), suitable for holding drills or bits with  $\frac{1}{4}$  in. round shank.

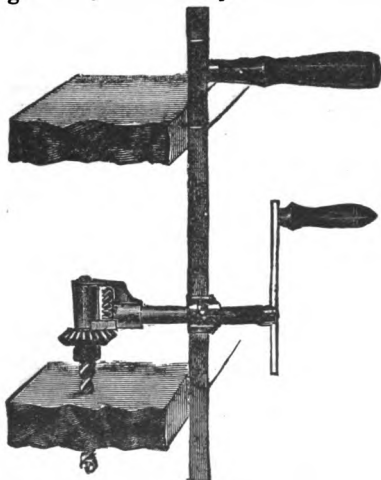


FIG. 3018. ANTHONY BORING TOOL.

This tool is especially useful for boring between joists and in close corners,

but can be used for regular work in many cases. It is about the only tool that can be used in narrow spaces. As shown in cut, it consists of an angle steel bar, 22 in. long, to which are attached the handle and boring mechanism.

Fig. 3018 shows the tool in position for boring joists or studding, for placing wires or pipes parallel with the floors and walls.

Two or more sets of holes can be bored, one above the other. There is a long range for adjustment from the guide to the bit. Main handle can be adjusted, crank can be set to any desired sweep up to 14 in. This tool can be taken apart in a moment to put in tool box. The chuck is arranged to hold machine bits with  $\frac{1}{4}$  inch round shank.

Price, complete, as shown, \$4.40.

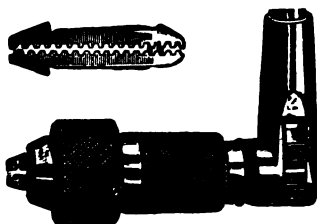
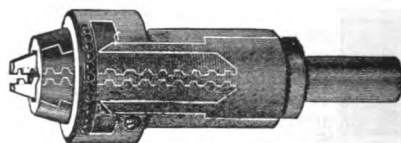


FIG. 3019. NEW RATCHET BRACE.

This has just been brought out, and is a most excellent tool. The Ball Bearings in the Chuck enable one to obtain a stronger grip than can be obtained with any other Brace. The Jaws open parallel, or at a slight angle, are interlocking and grip firmly either round, tapering or square shanks the entire length of the jaw; the head is also full ball bearing.

No.	1201	1202	1203
Price,	\$2.20	\$2.00	\$1.85
Sweep,	12 in.	10 in.	8 in.

## PLANES.

### BAILEY PLANES.

The Bailey Patent Adjustable Plane was brought out about twenty-five years ago. For a number of years after their introduction the prices on these planes were so high (nearly three times present prices), that the majority of mechanics couldn't afford to buy them—or at least—thought they couldn't, which amounts to the same thing. As the merits of the tool, however, became more apparent, the sales increased. Increased sales meant increased production, increased production meant better facilities, better facilities meant better goods and lower prices, and as a result, the Bailey Planes with all their advantages are sold to-day at very low prices.

### OTHER IRON PLANES.

Since the introduction of Bailey planes, there have been other styles of Iron Planes placed on the market, from time to time. Among the earlier ones were the Leonard-Bailey planes. They were considered pretty good tools. Then there were the Auburn Metallic Planes; these planes were quite well liked but never met with a very large sale.

The Rodier Plane was placed on the market twelve or fifteen years ago; this plane had a single iron or bit, with special adjustment, and the bottom of the plane was corrugated. We sold quite a large number of them, and some mechanics liked them.

All of the above named, together with a score or more of others, have practically been out of the market for a good many years.

The Chaplin Iron Plane (see illustration and prices on page 635) is still another type; these have corrugated bottoms, rubber handles, are handsome tools, and of excellent quality. Steer's Patent Plane is in a general way quite similar to some of the others mentioned. Originally the bottoms of these planes were inlaid with rosewood strips dove-tailed into the iron, but now they are made with all Iron bottoms as well.

We might say a good deal more about

other Iron Planes, but this is perhaps enough of what is ancient history. Many of our readers will remember some of the planes referred to, and we will take up the subject of

### OTHER BAILEY (?) PLANES.

By reason of the fact that the Stanley Rule & Level Co. were the owners of the original Bailey patents, and sole manufacturers of these planes for many years, they are the only concern that is really entitled to use the name Bailey. There are a number of manufacturers in the field with Planes more or less similar to the ones made by the Stanley Rule & Level Co. The above company have been engaged in the manufacture of these planes for upwards of twenty years. Practically all of the improvements (and there have been many) have been invented, designed and made by them. The quality of their production has been universally good. There are about four millions of their planes in use, and we believe that the planes made by this company, while costing but little more than others, are worth to the mechanic a great deal more than the slight difference in price.

In these planes are Combined all of the latest valuable improvements, including the lateral adjustment, which enables one to adjust the plane iron side-ways in order to set the cutting edge exactly square with the face of the plane, which is entirely independent of the forward and backward adjustment of the cutter.

Also the patent improved form of Plane Irons, which enables the irons to be handled to greater advantage, and used much closer than formerly.

Therefore, in buying Bailey planes, be sure that they are made by the Stanley Rule & Level Co.\* Don't take anything that is called "Just as good." (Read article "Just As Good," see Index).

\*We are not in the employ of the S. R. & L. Co., and this isn't a paid advertisement. When we find a line of Planes that is better than the above company make, we will certainly make a change—only we don't expect to find them soon.

## BAILEY BENCH PLANES.

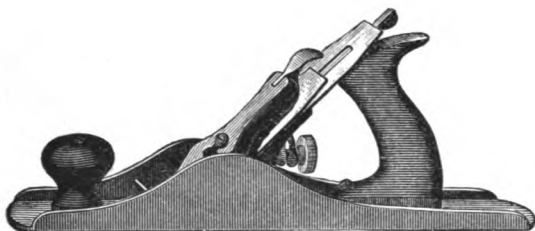


FIG. 3020. IRON FORE PLANE.  
Style of Nos. 5, 6, 7, 8.

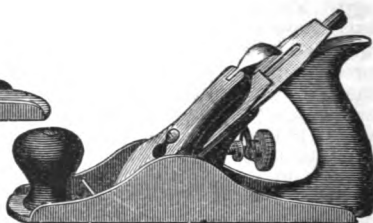


FIG. 3023. IRON SMOOTH PLANE.  
Style of Nos. 1, 2, 3, 4, 4½.

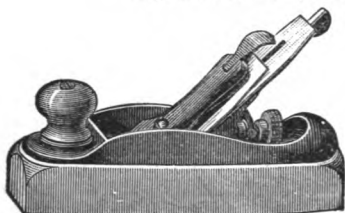


FIG. 3021.

WOOD BOTTOM SMOOTH  
PLANE.

Style of Nos. 21, 22, 23, 24, 25.

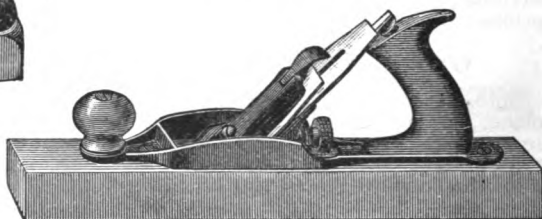


FIG. 3024.

WOOD BOTTOM JACK PLANE.

Style of Nos. 26 to 34.

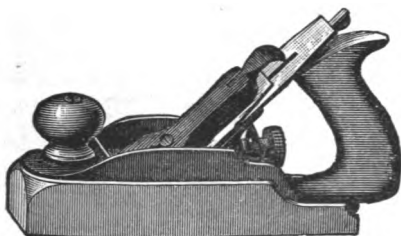


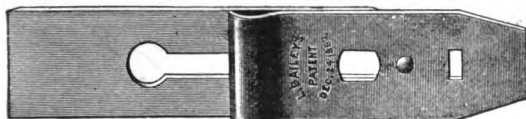
FIG. 3022. HANDLED SMOOTH PLANE.  
Style of Nos. 35, 36, 37.

## PRICE LIST IRON PLANES.

No.	Each.	Style.	Length.	Size Cutter.
1	\$1.02	Smooth	5½ in.	1½ in.
2	1.24	"	7 "	1¾ "
3	1.35	"	8 "	1¾ "
4	1.47	"	9 "	2 "
4½	1.70	"	10 "	2½ "
5	1.70	Jack	14 "	2 "
6	2.15	Fore	18 "	2½ "
7	2.48	Jointer	22 "	2¾ "
8	2.93	"	24 "	2¾ "

## PRICE LIST WOOD BOTTOM PLANES.

No.	Each.	Style.	Length.	Size Cutter.
21	\$0.90	Smooth	7 in.	1½ in.
22	.90	"	8 "	1¾ "
23	.90	"	9 "	1¾ "
24	.90	"	8 "	2 "
25	.90	Block	9½ "	1¾ "
26	1.02	Jack	15 "	2 "
27	1.13	"	15 "	2½ "
28	1.24	Fore	18 "	2½ "
29	1.24	"	20 "	2½ "
30	1.35	Jointer	22 "	2½ "
31	1.35	"	24 "	2½ "
32	1.47	"	26 "	2½ "
33	1.47	"	28 "	2½ "
34	1.58	"	30 "	2½ "
35	1.13	Handled Smooth	9 "	2 "
36	1.24	"	10 "	2½ "
37	1.35	Jenny	13 "	2½ "

FIG. 3025.  
BAILEY PLANE IRONS.

In ordering Plane Irons please specify number of Plane for which Iron is wanted.

Size,	1½	1¾	1½	2	2½	2¾	2½
Single, Each,	\$0.14	\$0.17	\$0.19	\$0.20	\$0.22	\$0.25	\$0.27
Postage,	.04	.04	.04	.05	.05	.05	.05
Double, Each,	\$0.27	\$0.30	\$0.34	\$0.37	\$0.40	\$0.43	\$0.47
Postage,	.06	.06	.06	.06	.07	.07	.07

**BAILEY BLOCK PLANES.**

These Planes are of the best quality; they have the patent lateral adjustment, and also the Stanley patent throat adjustment, which is a new feature and a good one. Under the front knob will be noticed an eccentric plate, by which the throat of the plane may be opened or closed for fine or coarse work.

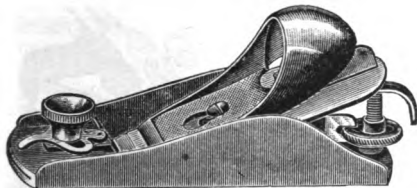
FIG. 3026. NO. 9½ BLOCK PLANE.  
No. 9½, \$0.68, 6 in long, 1½ in. cutter.

FIG. 3027. NO. 9¼ BLOCK PLANE.

We can furnish the same plane as the above (No. 9¼), with rosewood handle, price \$0.80, and No. 15¼, 7 in long, 1½ in. cutter, \$0.90.

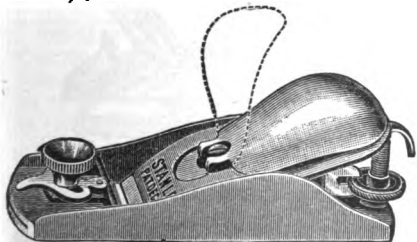


FIG. 3028.

**KNUCKLE JOINT BLOCK PLANE.**

No. 18, \$0.80, 6 in. long, 1½ in. cutter.  
No. 19, .84, 7 " 1½ "

In this plane the cap serves as a lever

also. It is nicely finished with nickel-plated trimmings.

CUTTERS for all Bailey Block Planes are the same. Price, each, \$0.14; postage, 4 cents.

**STANLEY IRON BLOCK PLANES.**

These planes are low in price, and, while not having the advantageous features of the Bailey block planes, are very useful for general work. There are other makers, but the Stanley Rule & Level Co's planes are the best.

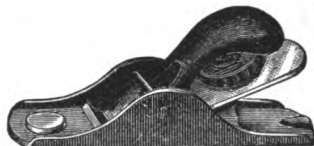


FIG. 3029. NO. 103 BLOCK PLANE.

No. 102, \$0.20, 5½ in. long, 1½ in. cutter.  
No. 103, .30; same as No. 102, but with adjusting lever.

CUTTERS.—Nos. 102 and 103, \$0.10; postage, 3 cents.



FIG. 3030. NO. 120 BLOCK PLANE.

No. 110, \$0.30, 7½ in. long, 1½ in. cutter.  
No. 120, .42; same as no 110, but with adjusting lever.



FIG. 3031. NO. 130 BLOCK PLANE.

No. 130, \$0.40, 8 in long, 1½ in. cutter.  
CUTTERS.—Nos. 110, 120 and 130, \$0.12; postage, 4 cents.

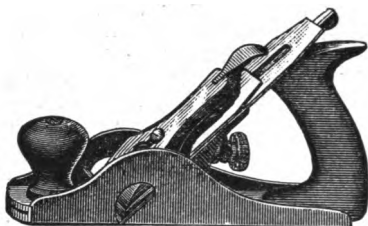


FIG. 3032.

**CARRIAGE MAKERS' RABBIT PLANE.**

No. 10½, \$1.70, 9 in. long, 2½ in. cutter.  
 No. 10, 2.03, 13 " 2½ " "

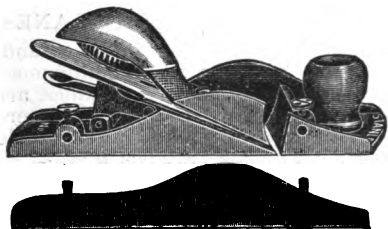


FIG. 3033.

**RABBIT AND BLOCK PLANE.**

This is a new tool, and has met with great favor; can be changed from a Block to a Rabbit plane. The cutter is set on a skew, and the side piece is detachable, as shown in cut.

No. 140, \$0.85, 7 in. long, 1½ in. cutter.

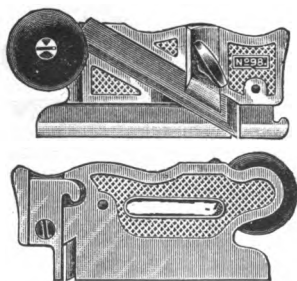


FIG. 3034. SIDE RABBIT PLANE

Also a new tool and a good one. Used for side-rabbeting and trimming dados, mouldings and grooves of all sorts. Front piece is reversible and can be arranged so that the tool will work close up into corners.

No. 98, \$0.70; 4 in. long.

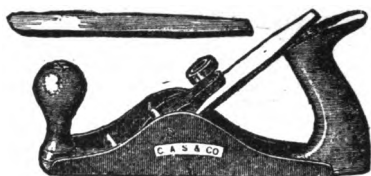


FIG. 3035. STANLEY SCRUB PLANE.

This takes the place of the German "Schrub-Hobel"; it has a narrow iron, with a rounding edge. Is used more especially for roughing work preparatory to the use of a jack and smooth plane.

No. 40, \$0.68, 9½ in. long, 1½ in. cutter.

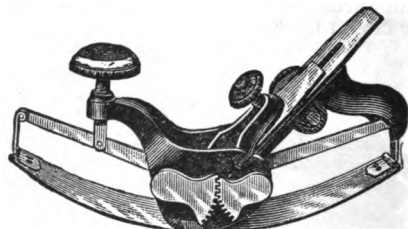


FIG. 3036.

**NO. 113 CIRCULAR PLANE.**

This has a flexible steel face, which is shaped to any required arc, either concave or convex by turning the knob on the front of the plane.

No. 113, \$1.80, Circular, 1½ in. cutter.

No. 13 (old style) furnished at same price.

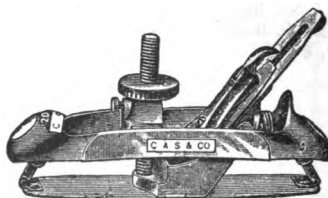


FIG. 3037.

**VICTOR CIRCULAR PLANE.**

This is an improved form of the adjustable circular plane; has latest adjustments, both longitudinal and lateral; is handsomely finished and nickel plated.

Victor, \$2.70, Circular, 1½ in. cutter.





FIG. 3038. SCRAPER PLANE.

This takes the place of the No. 12 Adjustable Veneer Scraper shown in former catalogues; it can be used for scraping and finishing veneers, cabinet work or hard woods in any form. By use of an extra cutter especially prepared, a superior Tooothing plane is made, and in addition to the ordinary uses of such a plane, this one will do excellent work in scraping off old paint and glue.

No. 112, \$1.35, Adjustable Scraper Plane, 9 in. long, 3 in. cutter.

Extra Cutters for scraping, \$0.15.

Cutters for Tooothing 22, 28 or 32 teeth to the inch, \$0.20.

### CABINET SCRAPERS.



FIG. 3039. CABINET SCRAPERS.

We carry in stock two kinds of Cabinet Scrapers; the first is the ordinary standard Scraper, and is as good—or better—than those usually sold. We have the following sizes:  $2\frac{1}{2} \times 4$  and 5 in. long;  $3 \times 4$ , 5 and 6 in. long, and  $3\frac{1}{2} \times 5$  and 6 in. long. Any size \$0.10; postage 4c.

Then we have an EXTRA QUALITY Cabinet Scraper; these are made from Jessop's steel, smithed and blocked by hand, edges draw-filed and finished ready for use.

Sizes  $2\frac{1}{2} \times 5$ ,  $3 \times 5$ ,  $3\frac{1}{2} \times 5$  and  $3\frac{1}{2} \times 6$ . Price, each, \$0.25; postage 4 cents.

### CONCAVE AND CONVEX.

These Scrapers are of French make; very fine quality. Sizes:  $2\frac{1}{2} \times 5$ ,  $3 \times 5$  and  $3 \times 6$ . Price, each, \$0.25; postage 4 cts.

### SWAN NECK SCRAPER.

About  $3 \times 5$  in. at outside. Price each, \$0.25; postage 4 cents.

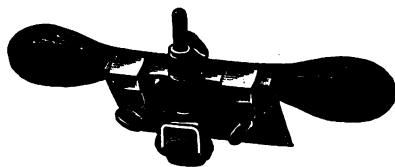


FIG. 3040. IMPROVED WOOD SCRAPER.

This Scraper can be adjusted to any desired pitch, and may be worked toward or from the person using it. The roller acts as a support to relieve the strain on the wrist and hands of the workman. The handle can be detached for working into corners.

No. 83, \$0.85, Scraper, 4 in. blade.

Extra Blades, each, \$0.15.



FIG. 3041. CABINET MAKERS' PLANE.

This plane is used by piano forte makers, cabinet makers and kindred trades, where an extra fine tool is required in finishing hard woods, etc. A metallic handle with slot and set-screw is furnished with each plane. This handle can be attached to the top of the plane on either edge. The plane turned on its side will then work perfectly on a shooting board for planing mitres, etc.

No. 9, \$3.00, Cabinet, 2 in. cutter.

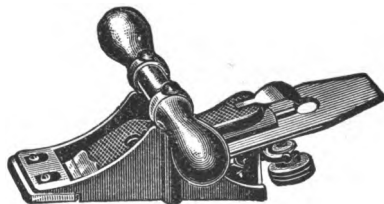


FIG. 3042. BELT PLANE.

This tool is used by belt makers for chamfering down the laps of a belt before fastening them together. It is equally well adapted to use in repairing belts in all manufacturing establishments.

No. 11, \$2.50,  $2\frac{1}{2}$  in. cutter.

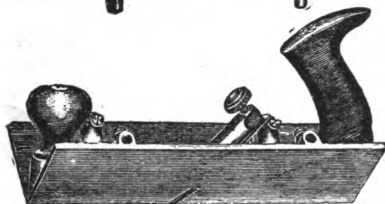
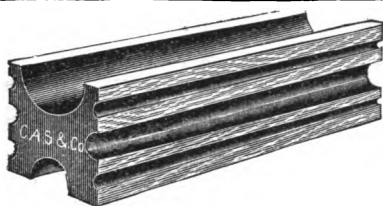


FIG. 3044. CORE BOX PLANE.

This is a tool that has been much needed by pattern makers, wheelwrights and others for planing out semi-circles. The plane is so constructed that the sides can be extended by additional sections,  $2\frac{1}{4}$  in. wide, until a diameter of 10 in. can be worked if desired.

No. 57, \$2.50, Core Box Plane, for semi-circles up to  $2\frac{1}{4}$  in. diameter.

Additional sections, per pair, \$0.85.



FIG. 3045. RABBET PLANE.

This plane will lie perfectly flat on either side, and can be used with right or left hand equally as well.

Nos. 180, 181 and 182 are plain; Nos. 190, 191 and 192 are provided with spurs.

No. 180,	\$0.68,	8 in. long,	$1\frac{1}{4}$ in. wide.
" 181,	.68,	8 "	" $1\frac{1}{4}$ " "
" 182,	.68,	8 "	" 1 " "
" 190,	.79,	8 "	" $1\frac{1}{4}$ " "
" 191,	.79,	8 "	" 1 " "
" 192,	.79,	8 "	" 1 " "

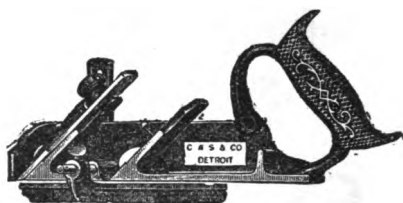


FIG. 3046.

### DUPLEX RABBET PLANE AND FILLISTER.

The valuable features of this plane can be seen by a glance at the illustration given above. Remove the arm to which the fence is secured, and a Handled Rabbet Plane is had; and with two seats for the cutter, so that the tool can be used as a Bull-Nose Rabbet if required. The construction of the stock is such that the plane will lie perfectly flat on either side, and can be used with right or left hand equally well, while planing into corners or up against perpendicular surfaces. The arm to which the fence is secured can be screwed into either side of the stock, thus making a superior right or left hand Fillister, with adjustable spur and depth gauge.

No. 78, \$1.02, Duplex,  $8\frac{1}{2}$  in. long,  $1\frac{1}{4}$  in. cutter.

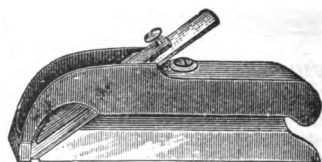


FIG. 3047. BULL NOSE RABBET PLANE.

No. 75, \$0.23, 4 in. long, 1 in. cutter.



FIG. 3048. UNIVERSAL HAND BEADER.

For Beading, Reeding or Fluting straight or irregular surfaces, and for all kinds of light Routing, this is a very convenient little tool for odd jobbing and tinkering work. It has a square gauge, for straight, and an oval gauge for curved work. Both ends of

the cutters are sharpened, thus embracing six sizes of Beads, 4 sets Reeds, 2 Fluters, and a double Router Iron ( $\frac{1}{4}$  and  $\frac{1}{2}$  in.).

No. 66, \$0.68, nickel plated with 7 steel cutters.

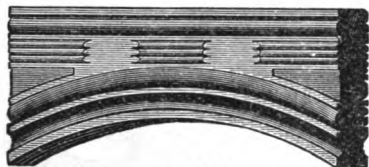


FIG. 3049.

#### SAMPLES OF WORK DONE BY BEADER.

#### A SLIGHT DIFFERENCE IN OPINIONS.

Several years ago a Vermont Yankee brought out a tool called the "New Beading & Moulding Tool." In its general workings it was quite similar to the No. 66 Hand Beader (Fig. 3048), but was rather more elaborately gotten up. We advertised it in an earlier edition of our Woodworkers' Tool catalogue, and sold a great many of them. In fact, although they have been out of the market for several years, we still get an occasional order. The selling price was \$2.00. In looking over an old lot of letters received about that time, we find two letters pinned together. These letters were received within a day or two of each other. Here's one:

LISBON FALLS, Me., Nov. 22, 1885.  
CHAS. A. STRELINGER & CO.  
Detroit, Mich.

Gentlemen:—I have received the New Beading & Moulding Tool, and I must say that I am delighted with it. If I could not get another, I would not take \$25.00 cash for it.

Yours respectfully,

CHAS. H. KOEPKA.

and here's the other:

DENVER, Colo., Nov. 18, 1885.  
CHAS. A. STRELINGER & CO.  
Detroit, Mich.

Dear Sirs:—The tools sent me on the 2nd of the month have been received. They are a splendid lot, and I am well satisfied with all of them excepting the New Beading & Moulding Tool. I think this is a humbug, and I must say that it takes a — (we don't care to print this word) sight more ingenuity to use this tool than it did to invent it. I

would like to send it back in exchange for something else, if I may.

Yours truly,

JAS. P. CALLAHAN.

We relieved Mr. Callahan's disgust by exchanging the tool, but it has always remained a matter of wonder with us as to which of these men diagnosed the case right.

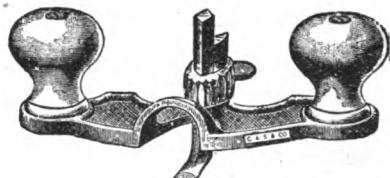


FIG. 3050. HANDY ROUTER PLANE.

This tool should be in the kit of every skilled carpenter, cabinet maker, stair builder, pattern maker or wheelwright. It is perfectly adapted to smooth the bottom of grooves, panels, or all depressions below the general surface of any wood work. This tool has lately been improved in form, and an additional yoke or clamp is now sent with each one. It is nickel plated.

No. 71, \$1.02, with 2 steel bits,  $\frac{1}{4}$  and  $\frac{1}{2}$  in.

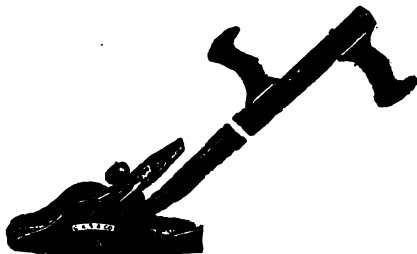


FIG. 3051. PATENT FLOOR PLANE.

This tool will be found useful for planing floors, bowling alleys, skating rinks, decks of vessels, etc. The construction of the plane will enable the owner to do more work, and with less outlay of strength, than can be done with any other tool. The weight of the plane is about 10 lbs., and the full length of the handle 45 in.

No. 74, \$4.50, Floor Plane, 10 $\frac{1}{2}$  in. long, 2 $\frac{1}{2}$  in. cutter.

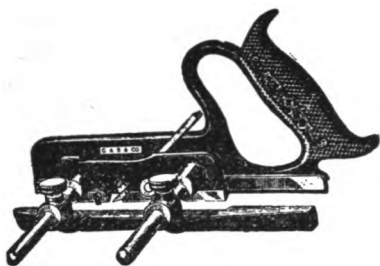


FIG. 3052.

## ADJUSTABLE BEADING PLANE.

This tool for ordinary beading or for center beading cannot be surpassed. By adjustment of the fence, center beading can be done up to 5 in. from the edge of the board. Except for working across the grain the spurs need not be used. The price includes Bits  $\frac{1}{8}$ ,  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ ,  $\frac{7}{16}$  and  $\frac{1}{2}$  inch.

No. 50, \$2.80, with 7 bits.

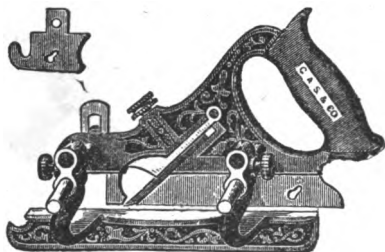


FIG. 3053.

BULL NOSE PLOW, FILLISTER AND  
MATCHING PLANE.

Two interchangeable front parts go with this tool. The form shown above is that of a Bull-Nose Plow; and the cutter will easily work up to and into a  $\frac{1}{2}$  inch hole, or any larger size, as in sash fitting, stair work, etc. With the other front on, it takes the ordinary form of a Plow, and is adapted to all regular uses.

With each tool eight Plow Bits ( $\frac{1}{8}$ ,

$\frac{1}{4}$ ,  $\frac{3}{16}$ ,  $\frac{1}{2}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ ,  $\frac{7}{16}$  and  $\frac{1}{2}$  inch), a Fillister Cutter and a Slitting Blade are furnished; also a Tonguing Tool ( $\frac{1}{2}$  inch).

No. 141, \$4.75; Bull-Nose Plow, Fillister and Matching Plane.

No. 143, \$3.38; same as the above, but without Fillister.



FIG. 3054.

## ADJUSTABLE CHAMFER PLANE.

The front section of the plane to which the cutter is attached is movable up and down. It can be firmly secured to the rear section of the plane at any desired point by means of a thumb screw. Without the use of any other tool this plane will do perfect chamfer or stop chamfer work of all ordinary widths.

When the two sections are clamped together so as to form an even base line, the tool can be used as an ordinary bench plane.

For Beading, Reeding, or moulding a chamfer, an additional section to this plane is furnished, with 6 cutters sharpened at both ends, including a variety of ornamental forms.

No. 72, \$1.35, 9 in. long,  $1\frac{1}{2}$  in. cutter.

No. 72 $\frac{1}{2}$ , \$2.03; same as No. 72, but with Beading and Moulding attachment.

## TONGUING AND GROOVING PLANE.

(Not Illustrated.)

This plane has two separate cutters at a suitable distance apart, and the guide is set as shown below, both cutters work and a tongue can be made. When the guide is swung round it covers one of the cutters, and also serves as a guide for grooving an exact match for the tongue.

No. 48, \$1.88, for  $\frac{1}{2}$  to  $1\frac{1}{2}$  Boards.

No. 49, \$1.88, for  $\frac{3}{8}$  to  $\frac{1}{2}$  Boards.

## COMBINATION PLANES.

Year after year the demand for Combination Planes has increased. Their convenient and valuable qualities have made them a necessary tool in every carpenter's outfit. From time to time they have been improved, and by reason of the largely increased output the prices have been reduced, until at the present time these planes, with twice as many valuable features as they formerly had, are sold at one-half the former price.

There have been a great many different types and styles of Combination Planes placed upon the market during our nearly thirty years' experience as dealers, and there are very few that we have not examined and sold.

We present in this catalogue a limited number, but all are of the latest and best styles.

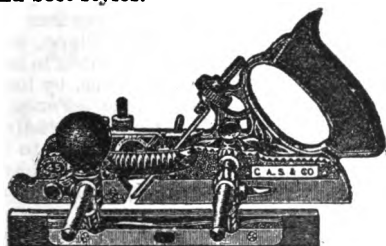


FIG. 3055.

NO. 45 ADJUSTABLE BEADING, RABBET AND SLITTING PLANE.

Price, \$5.40.

This is the most popular of the Combination Planes, and there are perhaps more of these in use than all other Combination Planes put together. The above is an illustration of the latest improved form. Have lately added an additional plow and dado bit  $\frac{1}{4}$  in., and a sash tool, making 20 tools in all that are now sent out with this plane. The cutters are adjusted by a screw, and also the depth gauge has the screw adjustment, both features adding greatly to the precision with which the plane can be worked. A Removable Rosewood Face is attached to the Fence; the Plane is nickel plated, and is sent out already set up for working, packed in a neat wooden box.

In each of its several forms this Plane will do perfect work; even in the hands of an ordinary mechanic—its

simplicity of construction and adaptation of parts (as described in the directions which accompany each tool) being easily understood.

Each Plane is accompanied by seven Beading Tools ( $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and  $\frac{7}{8}$  inch), ten Plow and Dado Bits ( $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and  $\frac{7}{8}$  inch), a Slitting Tool, a Tonguing Tool, and a Sash Tool.

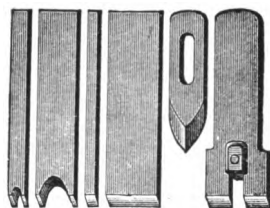
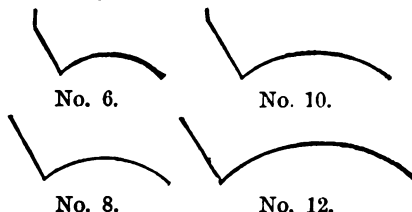


FIG. 3056. STYLES OF TOOLS.

Above cut shows the styles of Tools that are embraced in the set of 20 tools.



No. 6.

No. 10.

No. 8.

No. 12.

FIG. 3057. HOLLOWS AND ROUNDS.

These are additional parts to be used only with No. 45 Plane, and they are not included in the regular assortment sent out with plane. The outline cuts show exact size of Cutters; the prices are for a pair, complete.

No.	6	8	10	12
Price,	\$0.95	\$0.95	\$0.95	\$0.95

We can also furnish a NOSING TOOL for the No. 45 Plane, to be attached the same as Hollows and Rounds. It has  $1\frac{1}{2}$  in. Cutter. Price, \$0.75.

## REEDING TOOLS.

Additional tools for REEDING (see Nos. 212 to 235, page 637), consisting of 2, 3, 4 or 5 beads each, can be furnished at prices given below.

Size,	Beads. 2	Beads. 3	Beads. 4	Beads. 5
$\frac{1}{8}$ in.	\$0.18	\$0.27	\$0.36	\$0.45
$\frac{3}{16}$ "	.18	.27	.36	.45
$\frac{1}{4}$ "	.18	.27	.36	.45

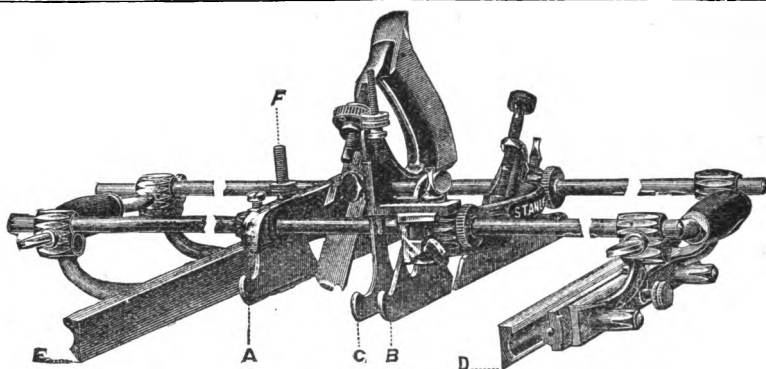


FIG. 3058. PATENT UNIVERSAL COMBINATION PLANE.

Price, complete with 52 Tools, Bits, etc., \$10.80.

This is altogether the most complete tool of its class that has ever been placed upon the market, and in the hands of a mechanic it can be used for nearly all lines of work covered by full assortment of what are known as Fancy Planes.

A customer of ours recently repaired his own dwelling, and in doing this needed to match some of the old mouldings. He procured an estimate from a wood-working factory, and found that the cost to him of the necessary mouldings would be greater than the cost of this plane, with which his carpenter had no difficulty in matching all the mouldings at very small expense. On the following two pages we show a line of Cutters that are suitable to use in this plane. The ones marked with a small black diamond (◆) are furnished with the planes; the others we can supply at prices as per accompanying list.

It is a MOULDING PLANE, MATCH, SASH, BEADING, REEDING, FLUTING, HOLLOW, ROUND, PLOW, RABBIT and FILLISTER, DADO, SLITTING and CHAMFER PLANE combined in one.

This Plane consists of: A Main Stock (A) with two sets of transverse sliding arms, a Depth Gauge (F) adjusted by a screw, and a Slitting Cutter with stop. A Sliding Section (B) with a vertically adjustable bottom. The Auxiliary Center Bottom (C) is to be placed in front of the Cutter as an extra support, or stop, when needed. This bottom is adjustable both vertically and laterally.

Fences D and E. Fence D has a lateral adjustment by means of a screw, for extra fine work. The Fences can be used on either side of the Plane, and the rosewood guides can be tilted to any desired angle up to 45 degrees, by loosening the screws on the face. Fence E can be reversed for Center Beading wide boards. An adjustable Stop to be used in beading the edges of matched boards is inserted on left hand side of sliding section (B).

This Plane is nickel plated; the 52 Cutters that accompany it are arranged in four separate cases, and the entire outfit is packed in a neat wooden box.

This Plane embraces in a compact and practical form: (1) Beading and Center Beading Plane; (2) Rabbit and Filletster; (3) Dado; (4) Plow; (5) Matching Plane; (6) a superior Slitting Plane; and (7) a Sash Plane.

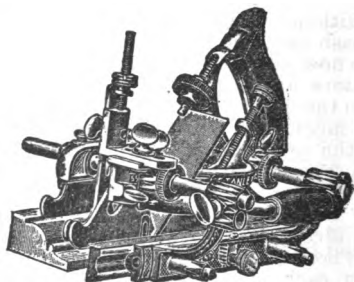


FIG. 3059. AS A MOULDING PLANE.

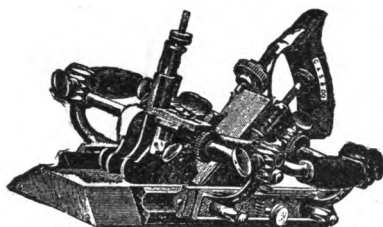


FIG. 3060. AS A CHAMFER PLANE.

## CUTTERS FOR UNIVERSAL PLANE.

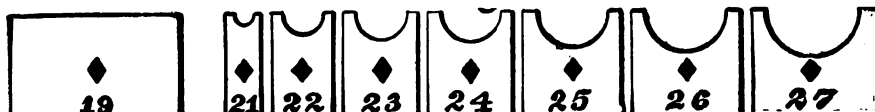
On this and succeeding two pages we illustrate (exact size) Cutters that can be used in this Plane.

Those marked (♦) are furnished with each plane. Others furnished at prices as per list, page 637.

### PLOW DADO AND RABBET TOOLS.



### BEADING TOOLS.



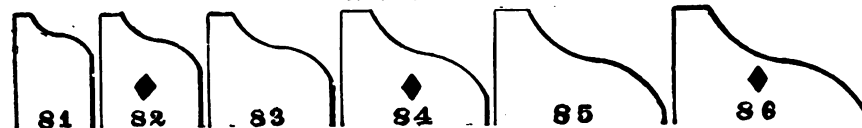
### GRECIAN OGEES.



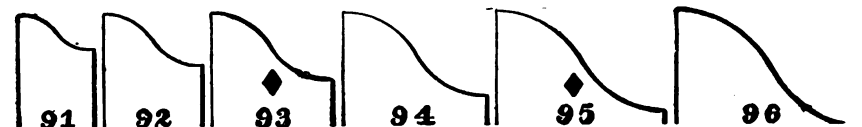
### QUARTER ROUNDS WITH BEAD.



### REVERSE OGEES.



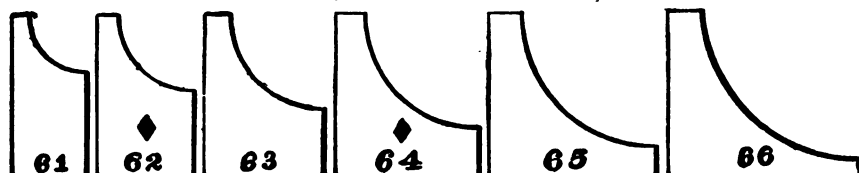
### ROMAN OGEES.



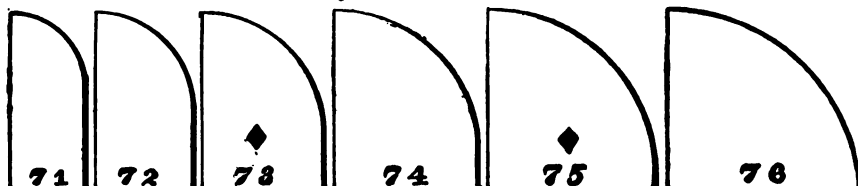
### ROUNDS.



## QUARTER HOLLOW.



## QUARTER ROUNDS.



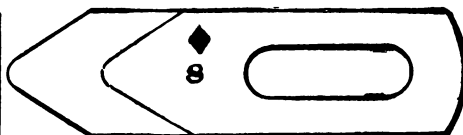
## HOLLOWS.



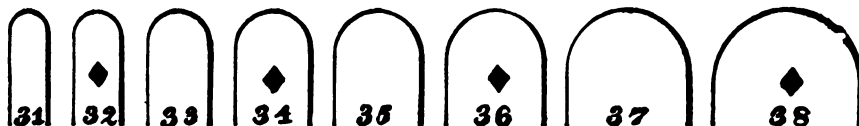
## FILLETSTER.



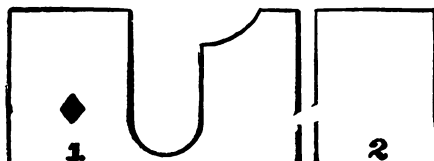
## SLITTING TOOL.



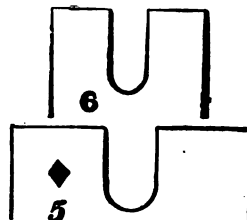
## FLUTING TOOLS.



## SASH TOOLS.



## MATCH TOOLS.

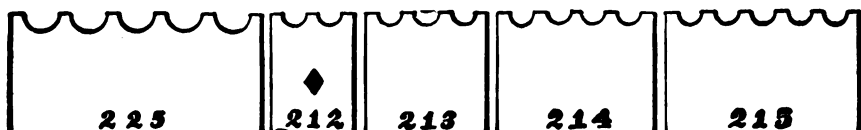


## REEDING TOOLS.

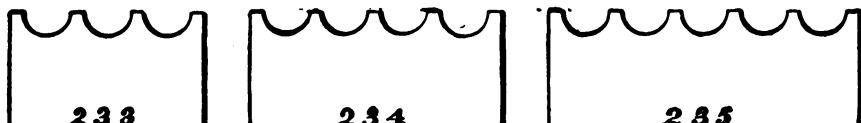




## REEDING TOOLS—Continued.



## REEDING TOOLS.



## PRICES OF CUTTERS.

Nos. 10, 11, 12, 13, 21, 22, 23.....	each, \$0.15
Nos. 14, 15, 16, 17, 18, 24, 25, 42, 43, 44, 45, 46, 47, 52, 53, 54, 55, 56, 57, 212, 222, 232 .....	" .18
Nos. 9, 19, 26, 27 .....	" .23
Nos. 8, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 213, 223, 233.....	" .27
Nos. 214, 224, 234 .....	" .35
Nos. 61, 62, 63, 71, 72, 73, 81, 82, 83, 91, 92, 93, 101, 102, 103, 111, 112, 113,	" .40
Nos. 1, 2, 5, 6, 64, 65, 66, 74, 75, 76, 84, 85, 86, 94, 95, 96, 104, 105, 106, 114, 115, 116, 215, 225, 235.....	" .45

## SIEGLEY COMBINATION PLANE.

(Not illustrated.)

This tool is an old favorite, and is sold quite extensively. It is a combination of a Plow, Dado, Side and Center Bead Plane. The following Bits are included: Plow Bits  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$ ,  $1$ ,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and 1 inch Match Bit; Bead Plane Bits  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $1$  in.

Siegley Plane, price, \$5.50.

We can furnish a Sash Moulding Cutter working from  $1\frac{1}{4}$  to  $1\frac{1}{2}$  in., at \$0.50.

## CHAPLIN PLANES.

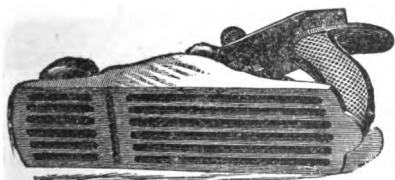


FIG. 3061. CHAPLIN IRON PLANE.

The Chaplin Patent Adjustable Iron Planes with Corrugated Face have been

in use for a great many years. They are handsomely finished goods, having checkered hard rubber handle and nickel-plated trimmings. It is claimed that the Corrugated Face makes a plane work easier; and these planes are very popular with many mechanics. The Nos. 1233 to 1277 are provided with Adjustable Throat.

Number.	Each.	Style.	Length.	Size Cutter.
1203	\$1.80	Smooth	8 in.	$1\frac{1}{2}$ in.
1205	1.94	"	9 "	2 "
1207	2.35	Jack	15 "	$2\frac{1}{2}$ "
1208	2.75	Fore	18 "	$2\frac{1}{2}$ "
1210	3.20	Jointer	22 "	$2\frac{1}{2}$ "
1211	3.75	"	24 "	$2\frac{1}{2}$ "

## WITH ADJUSTABLE THROAT.

Number.	Each.	Style.	Length.	Size Cutter.
1233	\$1.95	Smooth	8 in.	$1\frac{1}{2}$ in.
1255	2.10	"	9 "	2 "
1277	2.50	Jack	15 "	$2\frac{1}{2}$ "

## IRONS FOR CHAPLIN PLANES.

$1\frac{1}{4}$  in., \$0.27; 2 in., \$0.30;  $2\frac{1}{2}$  in., \$0.35;  
 $2\frac{1}{2}$  in., \$0.35;  $2\frac{1}{2}$  in., \$0.38;  $2\frac{1}{2}$  in., \$0.40.

## WOOD BENCH PLANES.

Many of the best mechanics prefer the Wood Bench Planes to the Iron and combination iron and wood planes, but have been compelled to use the latter, owing to the poor quality of the wood bench planes commonly sold.

The fact is that the majority of Wood Plane makers for several years past have been trying so hard to find out how *cheaply* they could make planes, that they have forgotten all about what a good plane means, and the result is that 90 per cent of the wood planes sold in the stores are almost good for nothing, and the other 10 per cent are but little better. The wood is unseasoned and spongy, and the irons so poor that they hardly hold an edge from the oil-stone to the work.

It is a positive fact that a first-class double Plane Iron cannot be made and sold at the price that many of the so-called first quality planes are sold at complete.

We have before us a catalogue just issued by a firm who deal quite extensively in mechanics' tools. In this catalogue the net selling price of a so-called first-class Smooth Plane with 2½ inch double iron, is \$0.56. We quote from the description of these planes, "The irons are guaranteed to be the best in the world." Turning over a page or two we come to Plane Irons priced separately, and find that 2½ inch double plane irons are sold at \$0.58. Quoting again from the description of the Plane Irons, "These Plane Irons are guaranteed to be the best made." It seems a little funny that the "Best irons in the world" should sell at \$0.56 with the balance of the plane thrown in, while the "best made" plane iron only, is held at a price of about 4 per cent higher.

The brand of Plane Irons referred to is of excellent quality; in past years we have sold quantities of them, but, in our judgment, they are very far from being the "Best made," and will not compare favorably with the Plane Irons made by any of the better class of English makers—say Moulson Bros., I. Sorby, Spear & Jackson, or Ward & Payne, French plane irons made by Peugeot Freres, or American plane irons made by Buck Bros.

## OUR BENCH PLANES.

As we could find no Bench Planes in the market that are suitable for our class of trade, we are compelled to have these planes made to our special order. All of our planes are made of well-seasoned Eastern Beech, are oiled, polished and shellaced; they have steel starts, and the jack, fore and jointer planes have bolted handles. The plane irons used are the Ward & Payne (Sheffield) brand, and if these irons are not the "Best in the world," they are certainly equal to any, and are the best we have ever been able to find. Every plane is stamped with our name, and we do not believe that the equal of these planes can be found elsewhere.

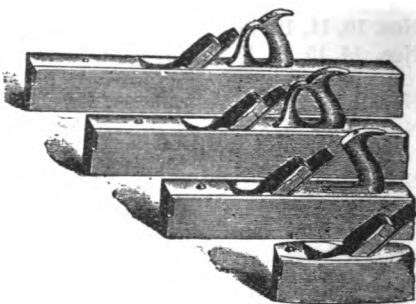


FIG. 3070. SET OF PLANES.

## PRICE LIST.

Smooth Plane, \$1.25, 2, 2½ or 2¾ iron.  
Handled, Smooth, \$2.00, 2, 2½ or 2¾ iron.  
Jack Plane, \$1.50, 2½ or 2¾ iron.  
Fore, 22 in., \$1.95, 2½ or 2¾ iron.  
Jointer, 28 in., \$2.50, 2½ or 2¾ iron.

## RAZEE PLANES.



FIG. 3071. RAZEE FORE PLANE.

These planes are lighter than the others, and are invariably sold with somewhat narrower irons.

Jack Plane, \$1.70, 2 or 2½ iron.  
Fore, 22 in., \$2.00, 2½ or 2¾ iron.  
Jointer, 26 in., \$2.65, 2½ or 2¾ iron.

**TOOTH PLANES.**

Eastern Beech, French Irons, \$1.25.

**FANCY WOOD PLANES.**

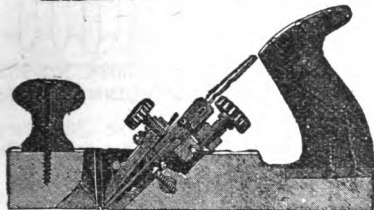
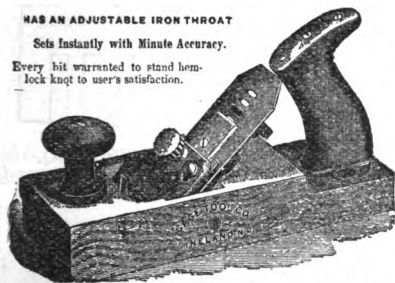
We sell quite a number of Applewood Bench Planes but do not carry them in stock—are furnished to order only—prices upon application. We can also supply Rose and Boxwood Planes.

**GAGE SELF-SETTING PLANE.**

HAS AN ADJUSTABLE IRON THROAT

Sets Instantly with Minute Accuracy.

Every bit warranted to stand hemlock knot to user's satisfaction.



SECTIONAL VIEW—Showing Adjustable Iron Throat, which can be lowered as desired, if wood wears away.



BOTTOM VIEW—Showing Adjustable Iron Throat. Possesses the advantages of iron planes without the disadvantages.

**FIG. 3072.****GAGE SELF-SETTING PLANE.**

These Planes have been on the market for eight or ten years, have met with a large sale, and in some sections are very popular. They are made of selected Beech.

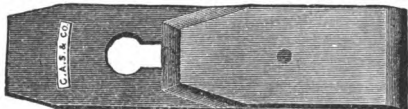
No.		Price.	Bit.	Length.
2	Smooth.....	\$2.40	1½	9 in.
4	" .....	2.60	2	9 "
7	Jack.....	2.60	1½	14 "
9	" .....	2.80	2	14 "
12	Fore.....	3.00	2	18 "
16	" .....	3.20	2½	20 "
18	Jointer .....	3.40	2½	24 "
21	" .....	3.60	2½	24 "

**PLANE IRONS.**

In our long experience of nearly thirty years, we have handled and used every well known make of Plane Iron. Among these were all of the American brands, and at least a dozen of the best known English and French. In our former Wood Workers' catalogue we listed six different brands. After thorough and careful tests our choice narrowed down to two—the Ward & Payne (English) and the Peugeot Freres (French), and between these two there really was but little difference, both makes excelling anything we had ever used. As carrying a line of both varieties entails needless expense, we had to choose, and so have selected the Ward & Payne brand (excepting in Tooth Plane Irons, as our customers like the style of teeth in the French irons the best).

**FIG. 3073. SINGLE PLANE IRON.****FIG. 3074. CUT PLANE IRON.**

Size,	1½	1½	1½	1½	2	2½
Each,	\$0.28	\$0.28	\$0.29	\$0.31	\$0.33	\$0.35
Size,	2½	2½	2½	2½	2½	3
Each,	\$0.40	\$0.46	\$0.48	\$0.53	\$0.58	\$0.75

**FIG. 3075. DOUBLE PLANE IRONS.**

Size,	1½	1½	1½	1½	2	2½
Each,	\$0.54	\$0.54	\$0.56	\$0.60	\$0.62	\$0.65
Size,	2½	2½	2½	2½	2½	3
Each,	\$0.70	\$0.77	\$0.82	\$0.90	\$1.00	\$1.25

**FIG. 3076. TOOTH PLANE IRON.**

Size,	2	2½	2½
Each,	\$0.35	\$0.37	\$0.40

# MISCELLANEOUS WOOD PLANES.

Under the above heading there comes what are known as Fancy Planes. There are several manufacturers in this country who make these lines of Planes. Some make better planes than others and we try to procure the best. None of the American makes equal those of the best English and Scotch makers. The Englishman said of American beer, "They can't make it you know, they haven't the Ops," and perhaps this is true of Moulding Planes, "We haven't the Beech you know." As a matter of fact, for Moulding Planes, Spoke Shaves and similar tools the English and Scotch beechwood is greatly superior to the American, and the best Moulding Planes we have ever seen are those made by Mathieson, of Glasgow, Scotland.

While to a great extent the Combination Planes like the No. 45 (page 633) are taking the place of the Moulding Planes, they do not by any means cover the entire ground. Where a considerable quantity of a certain kind of work is to be done, the Wood Planes are so much lighter and so much more convenient to handle, that it is not always the best economy to use a Combination Plane for this class of work.

We recently had an instance of this. A mechanic in boasting about the merits of his Combination Plane (a No. 45) stated that he had beaded 5,000 ft. of ceiling on a summer hotel job upon which he had been employed. We did not consider that this was very much to boast of, and think that any man who would use a plane weighing 3½ lbs. for six or eight days, when he might have bought a ½ Inch Bead Plane, weighing about 10 ounces, for 40 cents, and with it have done the work in 15 to 25 per cent less time, and with correspondingly less expenditure of strength, is rather closely related to that useful—though humble—animal, with kicking proclivities, long ears, and an unmusical voice.

The lines of Miscellaneous Planes shown here we usually carry in stock. Can furnish other sizes than those given here in many of the styles. Special sizes cost more, it takes time to procure them, and we would suggest that the stock—or listed—sizes be used whenever possible.

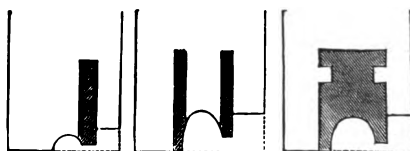


FIG. 3082.

NO. 47.  
SIDE BEAD.  
Single Boxed.

FIG. 3083.

NO. 48.  
SIDE BEAD.  
Double Boxed.

FIG. 3084.

NO. 49.  
SIDE BEAD.  
Solid Boxed.



FIG. 3085. NO. 51.  
CENTER BEAD.

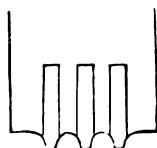


FIG. 3086. NO. 152.  
REEDING 2 BEADS.

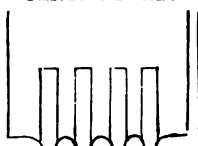


FIG. 3087. NO. 152.  
REEDING 3 BEADS.

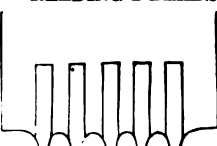


FIG. 3088. NO. 152.  
REEDING 4 BEADS.

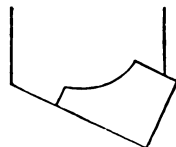


FIG. 3089. NO. 53.  
COVE.



FIG. 3090. NO. 54.  
SCOTIA OR  
QUARTER ROUND.

## PRICE LIST OF FANCY PLANES.

No. 47— $\frac{1}{4}$  to  $\frac{1}{2}$ , each size, \$0.34;  $\frac{3}{4}$  and  $\frac{7}{8}$ , \$0.37;  $1$  in., \$0.47.

No. 48— $\frac{1}{4}$  to  $\frac{1}{2}$ , each size, \$0.45;  $\frac{3}{4}$  and  $\frac{7}{8}$ , \$0.49;  $1$  in., \$0.60.

No. 49— $\frac{1}{4}$  to  $\frac{1}{2}$ , each size, \$0.53;  $\frac{3}{4}$  and  $\frac{7}{8}$ , \$0.60;  $\frac{1}{2}$  and  $\frac{3}{4}$ , \$0.68;  $1$  in., \$0.75.

No. 51— $\frac{1}{4}$  to  $\frac{1}{2}$ , each size, \$0.40;  $\frac{3}{4}$  and  $\frac{7}{8}$ , \$0.44.

No. 152—Reeding, sizes  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ . All sizes same price. (Fig. 3086) with 2 Beads, \$0.85; (Fig. 3087) with 3 Beads, \$1.30; (Fig. 3088) with 4 Beads, \$1.40.

No. 53—Cove,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$ , \$0.34;  $\frac{7}{8}$  and  $1$  in., \$0.45;  $1\frac{1}{2}$  in., \$0.60.

No. 54—Quarter Round or Scotia,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$ , \$0.34;  $\frac{7}{8}$  and  $1$  in., \$0.44;  $1\frac{1}{2}$ , \$0.56.



FIG. 3091. NO. 54 $\frac{1}{2}$ . Quarter Round.  
FIG. 3092. NO. 54 $\frac{1}{2}$ . Casing Moulding.  
FIG. 3093. NO. 82 $\frac{1}{2}$ . Roman Ogee

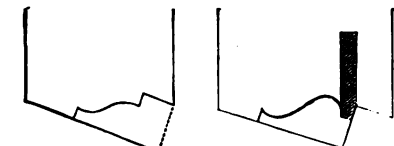


FIG. 3094. NO. 74. COMMON OGEE.  
FIG. 3095. NO. 77. GRECIAN OGEE.

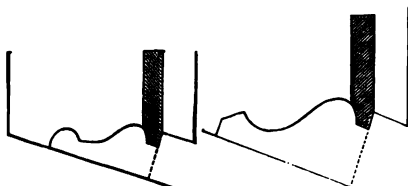


FIG. 3096. NO. 78. GRECIAN OGEE.  
FIG. 3097. NO. 79. GRECIAN OGEE.

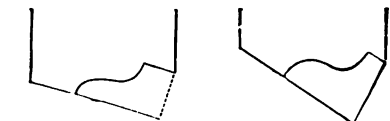


FIG. 3098. NO. 81. REVERSE OGEE.  
FIG. 3099. NO. 82. ROMAN REVERSE.

No. 54 $\frac{1}{2}$ —Quarter Round or Casing Moulding,  $\frac{3}{4}$ ,  $\frac{1}{2}$  and  $\frac{1}{4}$ , \$0.38;  $\frac{1}{2}$ ,  $\frac{1}{4}$  and 1 in., \$0.48; 1 $\frac{1}{2}$  in., \$0.56.

No. 54 $\frac{1}{2}$ —Casing Moulding with Fence,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$ , \$0.65;  $\frac{1}{2}$  and 1 in., \$0.75; 1 $\frac{1}{2}$  in., \$0.85.

No. 82 $\frac{1}{2}$ —Reverse Roman Ogee,  $\frac{3}{4}$ ,  $\frac{1}{2}$  and  $\frac{1}{4}$ , \$0.65;  $\frac{1}{2}$ ,  $\frac{1}{4}$  and 1 in., \$0.75; 1 $\frac{1}{2}$  in., \$0.85; 1 $\frac{1}{2}$  and 2 in., \$1.00.

The two above numbers are a new style of Plane for this work; they are made to work on a slight spring, and the iron is skewed, making the plane work much easier; the shaving leaves the plane much more freely.

No. 74—Common Ogee,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and 1 in., \$0.44; 1 $\frac{1}{2}$  and 1 $\frac{1}{2}$ , \$0.58; 1 $\frac{1}{2}$  and 2, \$0.75.

No. 77—Grecian,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and 1 in., \$0.58; 1 $\frac{1}{2}$  and 1 $\frac{1}{2}$  in., \$0.70; 1 $\frac{1}{2}$  and 2 in., \$0.85.

No. 78—Grecian and Bead,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and 1 in., \$0.87; 1 $\frac{1}{2}$ , 1 $\frac{1}{2}$ , 1 $\frac{1}{2}$  and 2 in., \$0.80.

No. 79—Grecian with Bevel or Fillet,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and 1 in., \$0.68; 1 $\frac{1}{2}$  and 1 $\frac{1}{2}$  in., \$0.85; 1 $\frac{1}{2}$  and 2 in., \$1.00.

No. 81—Reverse,  $\frac{1}{4}$  and 1 in., \$0.52; 1 $\frac{1}{2}$  and 1 $\frac{1}{2}$  in., \$0.65; 1 $\frac{1}{2}$  and 2 in., \$0.80.

No. 82—Roman Reverse,  $\frac{3}{4}$  and  $\frac{1}{2}$  in., \$0.52;  $\frac{1}{2}$  and 1 in., \$0.58; 1 $\frac{1}{2}$  in., \$0.67; 1 $\frac{1}{2}$  and 1 $\frac{1}{2}$  in., \$0.85.

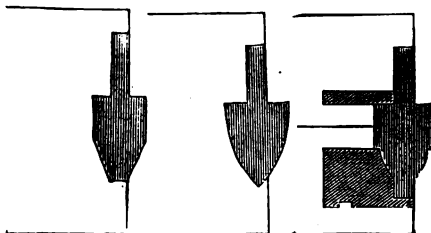


FIG. 3100. BEVEL.  
FIG. 3101. GOTHIC.  
FIG. 3102. OVALO.

### SASH PLANES.

No. 156—Sash, Bevel or Ovolo with 2 Irons, \$0.85.

No. 157—Sash, Bevel or Ovolo Box with 2 Irons, \$1.10.

No. 165—Sash, Gothic, Screw Arms with 2 Irons, \$1.60.

No. 166—Sash, Bevel or Ovolo, Screw Arms, Boxed with 2 Irons, \$1.75.

No. 167—Sash, Gothic, Screw Arms, Boxed, \$1.75.

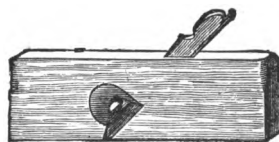


FIG. 3103. NO. 146—RABBET.

No. 146—Rabbet, Skew Irons,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and 1 in., \$0.40; 1 $\frac{1}{2}$  in., \$0.45; 1 $\frac{1}{2}$  in., \$0.48; 1 $\frac{1}{2}$  in., \$0.55; 2 in., \$0.63.

No. 150—Rabbet; Square Irons same price as No. 146.

COMPLAINTS.—We would ask our customers to report to us at the earliest possible time, any mistake or defects in goods sent, without any hesitation and in plain language. We take the greatest pains and mean to have everything right and satisfactory to our customers, and are more than willing to correct any errors that may occur.

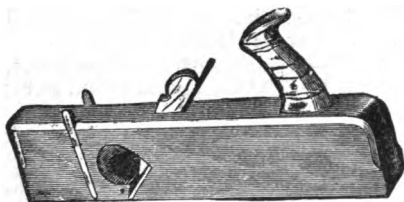


FIG. 3105. NO. 149—RABBET WITH HANDLE—OR JACK RABBET.

No. 149—Rabbet, with Handle, Skew Irons and 2 Cutters, all sizes, 1 to 2 in., \$1.20.

No. 151½—Side Rabbet, per pair, \$1.10.



FIG. 3106. NO. 62—DADO.

No. 60—Dado, Brass Side Stop, all sizes ½ to 1 in., \$0.75.

No. 62—Dado, Brass Screw Stop, all sizes, ½ to 1 in., \$1.10.

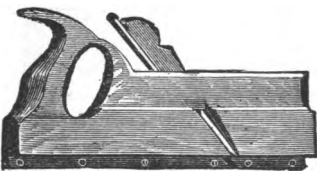
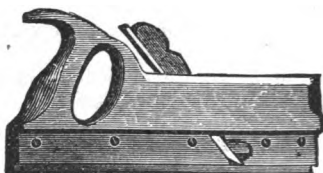


FIG. 3107. NO. 102—MATCH.

No. 99—Match, ½, ¾ and 1, per pair, \$1.00; 1½ and 1¾ in., per pair, \$1.40.

No. 100—Match, extra plated, ½, ¾ and 1, per pair, \$1.20; 1½ and 1¾ in. per pair, \$1.60.

No. 102—Match, Solid Handles and extra plated, ½, ¾ and 1, per pair, \$1.80.

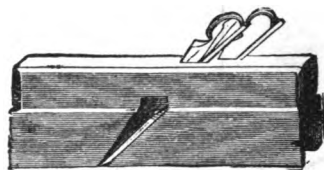


FIG. 3108. NO. 113—NOSING.

No. 113—Nosing Plane, 2 Irons, ¾ to 1½ in., \$0.80; 1¾ and 1¾ in., \$0.90.

No. 114—Nosing Plane. 2 Irons, with handle, ¾ to 1½ in., \$1.20; 1¾ and 1¾ in., \$1.40.

### HOLLOWS AND ROUNDS.

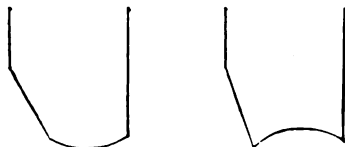


FIG. 3109. ROUND. FIG. 3110. HOLLOW.

No.	1	2	3	4
Per Pair,	\$0.50	\$0.50	\$0.50	\$0.50
Size,	½	¾	1	1½
No.	5	6	7	8
Per Pair,	\$0.50	\$0.50	\$0.60	\$0.60
Size,	¾	1	1½	2
No.	9	10	11	12
Per Pair,	\$0.60	\$0.75	\$0.75	\$0.75
Size,	1½	1¾	2	2½



FIG. 3111.

### SET OF HOLLOWS AND ROUNDS.

Price, per Set, Nos. 1 to 9, 9 sizes, \$4.80.

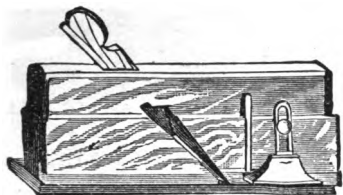


FIG. 3112. NO. 68—FILLETSTER.

No. 67—Filletster, with Cutter and Brass Side Stop, \$1.15.

No. 68—Filletster with Cutter, Brass Side Stop and Boxed, \$1.50.

No. 69—Filletster with Cutter, Brass Screw Stop and Boxed, \$2.00

## PANEL PLOWS.

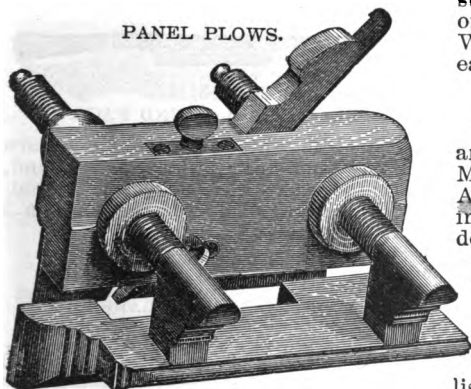


FIG. 3113. PANEL PLOW.

No. 118, \$4.40—Beech, Screw Stop, Boxwood Fence, no Handle.

No. 120, \$5.10—Beech, Screw Stop, Boxwood Fence, with Handle.

No. 124, \$6.00—Beech, Boxwood Arms, Boxwood Fence, with Handle.

No. 125, \$5.85—Applewood, Screw Stop, Boxwood Fence, with Handle.

No. 129, \$6.90—Applewood, Boxwood Arms, Boxwood Fence, with Handle

No. 132, \$7.50—Boxwood or Rosewood with Handle.

No. 137, \$9.75—Ebony, Ivory Tipped, with Handle.

Plow Irons, each, \$0.22; per Set of 8,  $\frac{1}{8}$  to  $\frac{1}{4}$ , \$1.50.

Plow Arms, per pair, complete—Applewood, \$1.50; Rosewood, \$2.00; Boxwood, \$2.50.

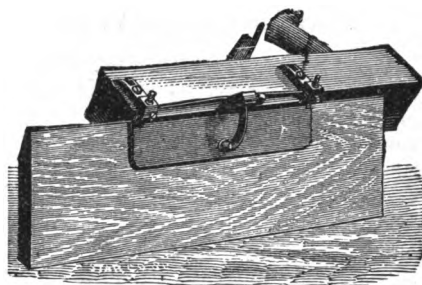


FIG. 3114. JOINTER GAUGE.

This Gauge is adjustable to any bevel desired, or for squaring. Can be instantly set without the use of a bevel or try square, is easily attached to any Wood, Jack or Jointer Plane. Price, each, \$1.40.

## OTHER PLANES.

We can furnish—to order—almost any style of Plane that may be desired. Many styles of Planes such as Pump, Astragal, Plank, Snipe Bill, Table, Raising, etc., etc., are kept in stock but the demand is so limited we do not feel justified in showing them here.

## AGENTS.

We wish to say that we employ no traveling agents, neither do we establish "Shop Agencies," as our prices are so low they do not admit of paying or allowing commissions. This book is our "Traveling Man." We know that it is not eloquent or persuasive in the sense that a good talker is, but it brings plainly to notice a thousand and one different articles that an agent could not begin to know or think of.

We can send it for a small sum, while it costs many dollars to send a traveler. It is compact in size and shape, takes up but very little room, and you can always have it with you (unless some one steals it, which you will have to look out for).

Finally, it is honest, and makes no promises it cannot fulfill.

If you have any friends who use any of the goods shown in this catalogue, and to whom you think the book would be of some benefit, if you will send us their address, we will feel indebted for the kindness.

## WOOD SPOKE SHAVES.

Wood Spoke Shaves are not used as much as they formerly were. The principal reason for this was the introduction some years ago of the Iron Spoke Shave. We do not believe that there are very many (the majority of imported Spoke Shaves have also been of indifferent quality) first-class Wood Spoke Shaves made in this country, the most of them being cheap and of inferior quality. The one advantage that the Iron Spoke Shave has over the other is in the greater ease in sharpening. We have hundreds of customers, first-class mechanics, who will use nothing but the Wood Spoke Shave. They claim that a good Wood Spoke Shave is superior to the Iron, and that the steel and temper are better, that they work nicer (as one customer expresses it they cut "sweeter"), and we must confess that we have quite a leaning towards this opinion ourselves.

Our Wood Spoke Shaves are the John Wilson (Sheffield, Eng.) brand, and after going into the matter thoroughly, we are inclined to think they are the best Spoke Shaves made, as regards both quality and temper of steel and quality of wood.

**AS TO WOOD**—We used to have these in beech, box, ebony and rosewood, but have discontinued keeping the three latter. The English beech is close and firm grained. The boxwood may be a little harder, but is apt to have small knots and flaws; is also considerably more expensive. Rosewood is very pretty to look at, but is of a gummy nature and does not work as kindly as either of the other two.

**AS TO STYLE**—We keep the Plain Beech, the Brass Plated Beech, and the Brass Plated Beech with Screw Irons.



FIG. 3118.

## BEECHWOOD SPOKE SHAVE.

Size,	2	2½	3	3½
Each,	\$0.35	\$0.35	\$0.45	\$0.50



FIG. 3119

## BEECHWOOD PLATED SPOKE SHAVES.

Size,	2½	3	3½
Each,	\$0.45	\$0.55	\$0.65



FIG. 3120.

## BEECHWOOD SCREW IRON, PLATED.

Size,	2½	3	3½
Each,	\$0.90	\$1.00	\$1.15



FIG. 3121.

## BEECHWOOD, ROUND FACE.

This is a light, handy tool for pattern or any fine work. The face is round, and the irons are backed off round. The diameter of center part on the 2 inch size is about ½ inch.

In two sizes, 2 and 2½ in., \$0.40.

## SPOKE SHAVE BLADES.

Size,	2	2½	3	3½
Each,	\$0.20	\$0.20	\$0.20	\$0.25

## IRON SPOKE SHAVES.

We present here a very complete line of Iron Spoke Shaves, some of them new design and useful for special purposes. They are all of the best quality in their respective classes.

In order to utilize the engravings we have, we have shown these in nearly all cases with part of one handle cut off. It will be understood that both sides of the Spoke Shave are alike.

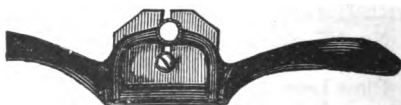


FIG. 3122. NO. 53—RAISED HANDLE.

Adjustable, 10 in., 2½ Cutter, \$0.25.  
Extra Cutters, \$0.10, post paid.





FIG. 3125. NO. 54—STRAIGHT HANDLE.

Adjustable, 10 in.,  $2\frac{1}{4}$  Cutter, \$0.25.  
Extra Cutters, \$0.10, post paid.

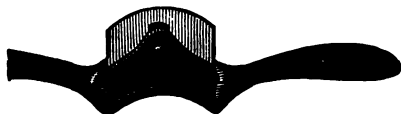


FIG. 3126. NO. 55—HOLLOW FACE.

Double Iron, 10 in.,  $2\frac{1}{4}$  Cutter. \$0.25.  
Extra Cutters, \$0.10, post paid,



FIG. 3127.

NO. 60—HOLLOW AND STRAIGHT.

Double Cutter, 10 in.,  $1\frac{1}{2}$  in Cutter,  
\$0.25. Extra Cutters, \$0.15 per pair,  
post paid.



FIG. 3128. NO. 62—REVERSIBLE.

This Spoke Shave can be worked to  
and from the person using it without  
changing position.

Raised Handle, heavy, 10 in.,  $2\frac{1}{4}$  Cut-  
ter, \$0.40. Extra Cutters, \$0.10, post  
paid.



FIG. 3129.

NO. 65—CHAMFER SPOKE SHAVE.

The Gauges are adjustable, and it is  
suitable for chamfering any width up to  
 $1\frac{1}{2}$  inch.

Raised Handle,  $1\frac{1}{4}$  in. Cutter, \$0.35.  
Extra Cutters. \$0.10, post paid.

**TEARING CATALOGUE.**—Each article in this  
book is designated by either a figure number,  
stock number, or both. Please do not cut or  
deface this book. Order goods by figure or stock  
number



FIG. 3130. CONVEX SPOKE SHAVE.

Wood Handle, 2 in. Cutter, \$0.75.



FIG. 3131. CONCAVE SPOKE SHAVE.

Wood Handle, 2 in. Cutter, \$0.75.

The above tools are comparatively  
new, are strong and well finished, and  
either handle may be removed for using  
in short spaces.



FIG. 3132.

CIRCULAR SPOKE SHAVE NO. 1.

The circular shape of this tool en-  
ables it to work in very small surfaces.  
Either handle can be removed to work  
in cramped places. Price, each, \$0.75.

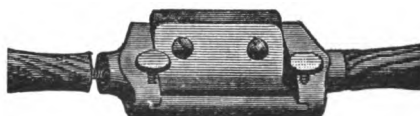


FIG. 3133. FOUR FACED SPOKE SHAVE.

This is the latest design in the way of  
a Spoke Shave. It has a throat regu-  
lator which will present to the knife  
four faces; one flat, two oval or convex,  
and one concave. With either face a  
wide or narrow throat may be had.  
Either handle may be taken off to work  
in cramped places. It has cocobola  
handles and the metal parts are nickel  
plated. It is a handsomely finished  
tool, and the most complete tool of this  
class that has ever been brought out.

Length, 11 in., 2 in. Cutter; weight,  
10 oz. Price, \$1.00.

**DRAW KNIVES.**

The line of Draw Knives shown here is very complete, and we believe they will be found in point of quality all that can be desired.

In the regular styles (Figs. 3134 to 3136) comprising Razor Blade Carpenters', Carriage Makers', Wagon Makers', and Shingle Knives, we furnish the handsomest and best finished line ever placed on the market. The handles are of Rosewood or Cocobola, and the knives are of extra fine finish, the blades being highly polished and ground sharp. The blades are forged from best quality tool steel.

**ADJUSTABLE HANDLE DRAW-ING KNIVES.**

This is a very commonly used style of Knife. In these Knives we handle the best lines obtainable.

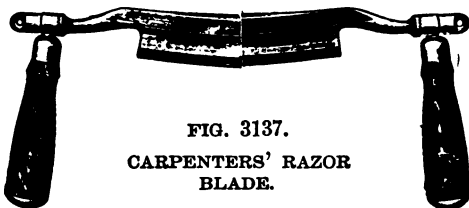


FIG. 3137.

**CARPENTERS' RAZOR  
BLADE.**

The average width of the Carpenters' Knife is about  $1\frac{1}{2}$  in.

Size,	6	8	10	12
Each,	\$0.70	\$0.75	\$0.90	\$1.25

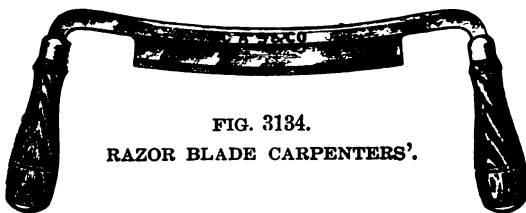


FIG. 3134.

**RAZOR BLADE CARPENTERS'.**

This is the style of knife we sell the most of. Sizes given are length of blade. Average width of blade  $1\frac{1}{2}$  in.

Size,	6	7	8	10	12
Each,	\$0.90	\$0.95	\$1.00	\$1.10	\$1.20

FIG. 3135. **WAGON MAKERS' AND  
SHINGLE KNIVES.**

The Wagon Makers' Knife is heavier than the Razor Blade Carpenters'; average width of blade about  $1\frac{1}{2}$  in.

Size,	6	8	10	12
Each,	\$1.00	\$1.10	\$1.20	\$1.35

The Shingle Knife is a still heavier Knife than the Wagon Makers'. Average width of blade about  $1\frac{1}{2}$  in.

Size,	10	12	14	16
Each,	\$1.35	\$1.50	\$1.60	\$1.70

FIG. 3136. **CARRIAGE KNIFE.**

The Carriage Knife is a narrow bladed knife bevelled on both sides; average width of blade about  $\frac{1}{2}$  in.

Size.....	6	8
Each.....	\$0.95	\$1.10

FIG. 3138. **SHAPE OF CARRIAGE  
OR SCROLL KNIFE.**

This is a narrow knife, beveled on both sides. Blades are  $\frac{1}{2}$  to  $\frac{3}{4}$  in. wide.

Size.....	6	8
Each.....	\$0.70	\$0.75

FIG. 3139. **SHAPE OF COACH MAKERS' KNIFE.**

This is the wide pattern, beveled on both sides. Blades are  $1\frac{1}{2}$  to  $1\frac{1}{4}$  in. wide.

Size,	6	8	10
Each,	\$0.80	\$0.85	\$1.00

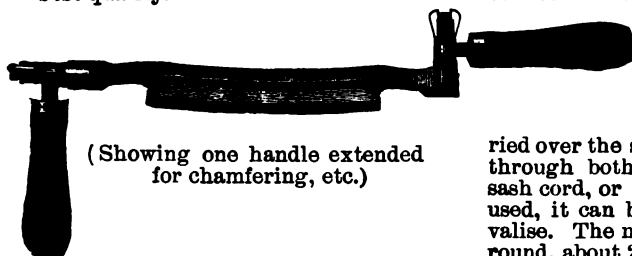


(Showing Knife Folded.)

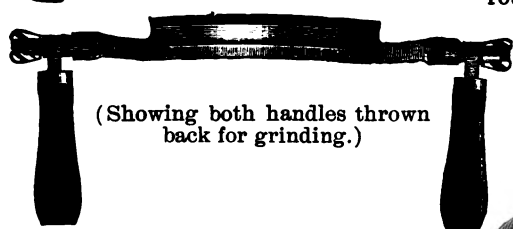
FIG. 3140. **FOLDING AND ADJUSTABLE  
HANDLE DRAW KNIFE.**

The Folding and Adjustable Handle Draw Knife has a number of advantageous features; it is compact, an 8 inch knife with handle folded occupying a space of about  $13 \times 2\frac{1}{2}$  in. The folding handle protects the blade from injury, thus saving time in grinding and putting knife in order, and the owner need have no fear of being cut while looking

for other tools. It is much easier to grind, and the handles can be adjusted in all directions. The blades are formed from solid steel bars, carefully tempered and ground, and are of the very best quality.



(Showing one handle extended for chamfering, etc.)



(Showing both handles thrown back for grinding.)

Size,	6	7	8	10
Each,	\$1.30	\$1.40	\$1.50	\$1.60



FIG. 3141. CHAMFER ATTACHMENTS.

This is a very useful Attachment to a draw knife; prevents the knife from drawing into the work and spoiling it, makes every chamfer alike, and can be adjusted to any width. They are nicely finished and nickel plated, are made in four sizes: No. 1 fitting blades  $\frac{1}{2}$  to 1 inch, No. 2,  $1\frac{1}{2}$  to  $1\frac{1}{4}$  inch; No. 3,  $1\frac{1}{2}$  to  $1\frac{1}{4}$  inch; and No. 4,  $1\frac{1}{2}$  to  $1\frac{1}{4}$  inch. Price, per set, \$0.55; postage 6 cents.

#### ENGLISH TOOL BASKETS.

When a "Yankee" carpenter has a little job to do a few squares or a few miles from the shop, he takes his tool box with tools (about 30 lbs. of tools, 15, sometimes 25 lbs. of box) shoulders it, and starts off to his work. Now, we do not mean to quarrel with him for doing

this, but would suggest that it was about time to do away with the box business and use a Tool Basket. The middle size weighs about eighteen ounces, and while the difference in weight between the box and basket (from ten to twelve pounds) is not much for a single lift, it certainly makes a very material difference in a walk of a mile or two.

This basket can be carried over the shoulder by a stick shoved through both handles, or a piece of sash cord, or when only a few tools are used, it can be carried the same as a valise. The middle size measures when round, about 21 inches in diameter, and when flattened sidewise by the shape and weight of the long tools (as jointer and saws), about 33 inches. They are soft and pliable, very strong, and with fairly decent usage will last for years.



FIG. 3142. ENGLISH TOOL BASKET.

#### ORDINARY.

Small, price, each,	\$0.50;	postage,	16c.
" " "	.65;	"	18c.
" " "	.75;	"	23c.

#### CLOTH LINED.

Small, price, each,	\$0.75;	postage,	22c.
" " "	.85;	"	25c.
" " "	1.00;	"	30c.

#### C. O. D.

The practice of sending goods C. O. D. (Collect On Delivery) is, fortunately, growing less common. It entails extra expense both to the buyer and seller, and usually indicates distrust and suspicion. In these days it is not a difficult matter to ascertain the commercial standing of a business house.

Therefore, we will *not* send goods C. O. D.

## CHISELS AND GOUGES.

## SOCKET CHISELS.

Our Socket Chisels and Gouges are sent out under our own brand. Up to within a year or two we carried in stock a great variety of makes, among them D. R. Barton, Buck Bros., L. & I. J. White, Chas. Buck, A. W. Crossman, Merrill & Wilder and James Swan. All of the above makers turn out a large proportion of good tools, and in the best grades of these different makers we believe it is a toss-up for choice. Our only reason for carrying the great variety was the desire to cater to the wants of

our great number of patrons. However, as we increased the number and variety of styles, we found that carrying all these different brands was a burden, and as we had to personally guarantee the quality of these tools, without reference to who the maker might be, we concluded to drop them all and substitute our own brand.

Our Chisels and Gouges are made by one or other of the above makers, are made and finished to our own designs and specifications, and are high grade tools throughout.

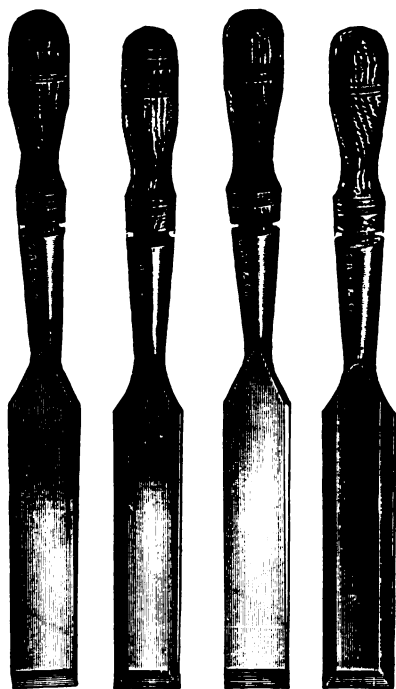


FIG. 3145. FIG. 3146. FIG. 3147. FIG. 3148.  
NO. 130. NO. 140. NO. 13. NO. 14.

Fig. 3145, No. 130—SOCKET FIRMER CHISELS, 6½ in. Blades.

This is our Standard line, and we believe there is nothing better made. In fact, as regards finish we think they

are superior to all others. They are provided with Leather Tipped Hickory Handles, are ground sharp and honed ready for use.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{2}$	$2$	$2\frac{1}{2}$
Each,	\$0.33	\$0.33	\$0.33	\$0.37	\$0.42	\$0.46

Size,	$\frac{1}{2}$	$1$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.48	\$0.50	\$0.54	\$0.58	\$0.63

Price, per Set of 12,  $\frac{1}{2}$  to 2 in., in fancy wood box, \$5.10.

Fig. 3146, No. 140—SOCKET FIRMER CHISELS, with Bevel Edges.

These are the same Chisels as No. 130, but with Bevel Edges.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{2}$	$2$	$2\frac{1}{2}$
Each,	\$0.40	\$0.40	\$0.40	\$0.45	\$0.50	\$0.54

Size,	$\frac{1}{2}$	$1$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.57	\$0.59	\$0.63	\$0.67	\$0.73

Price per Set of 12,  $\frac{1}{2}$  to 2 in., in fancy wood box, \$6.00.

Fig. 3147, No. 13—SOCKET FIRMER CHISELS, 6½ in. Blades.

In quality of steel and temper these Chisels are identical with the No. 130 (Fig. 3145); they are not as highly finished, but are as well finished as any Chisels in the market, excepting our Nos. 130 and 140. They are sharpened and honed ready for use, and have good hickory handles.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{2}$	$2$	$2\frac{1}{2}$
Each,	\$0.25	\$0.25	\$0.25	\$0.28	\$0.30	\$0.32

Size,	$\frac{1}{2}$	$1$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.35	\$0.38	\$0.43	\$0.45	\$0.48

Price, per Set of 12,  $\frac{1}{2}$  to 2 in., \$3.60

**Fig. 3148, No. 14—SOCKET FIRMER CHISELS, with Bevel Edges.**

These are the same as No. 13, but with Bevel Edges.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	$2$	
Each,	\$0.32	\$0.32	\$0.32	\$0.35	\$0.38	\$0.40
Size,	$\frac{7}{8}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	2
Each,	\$0.43	\$0.46	\$0.52	\$0.54	\$0.57	\$0.60

Price, per Set of 12,  $\frac{1}{4}$  to 2 in., in plain wood box, \$4.50.

NOTE.—When desired, we will furnish either the No. 13 or 14 Chisels with Leather Tipped Hickory Handles, at an extra expense of 5 cents each, or 50 cents per dozen.

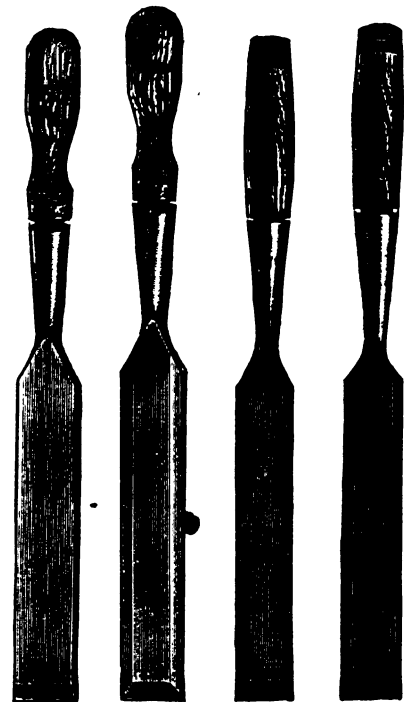


FIG. 3149. FIG. 3150. FIG. 3151. FIG. 3152.  
NO. 21. NO. 22. NO. 9. NO. 10.

**Fig. 3149, No. 21—LONG SOCKET PARING CHISELS, 8 in. Blades.**

These have Hickory Handles, and are sharpened and honed ready for use.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	$2$	
Each,	\$0.36	\$0.36	\$0.38	\$0.40	\$0.43	\$0.46
Size,	$\frac{1}{4}$	$1$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.50	\$0.54	\$0.60	\$0.67	\$0.75	\$0.84

Price, per Set of 12,  $\frac{1}{4}$  to 2 in., \$5.65.

**Fig. 3150, No. 22—LONG SOCKET PARING CHISELS, with Bevel Edges.**

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.43	\$0.43	\$0.45	\$0.48	\$0.50	\$0.54
Size,	$\frac{1}{4}$	$1$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.59	\$0.63	\$0.70	\$0.78	\$0.86	\$0.98

Price, per Set of 12,  $\frac{1}{4}$  to 2 in., \$6.75.

NOTE.—When desired, we will furnish either the No. 21 or 22 Chisels with Leather Tipped Hickory Handles, at an extra expense of 5 cents each, or 50 cents per dozen.

**Fig. 3151, No. 9—MILLWRIGHT CHISEL.**

This is a new style of Millwright Chisel. In weight between the Socket Firmer and Framing Chisels, and for medium and heavy work they are, in our judgment, the best tool made. Each Chisel is forged from a bar of solid tool steel. A customer writes "Since buying the set of No. 9 Millwright Chisels I have discarded my old sets of Socket Firmer and Framing Chisels, for I find that these are light enough for any work and heavy enough for any."

Are furnished with Leather Tipped Hickory Handles, ground sharp and honed ready for use.

**8 INCH BLADES.**

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.60	\$0.63	\$0.65	\$0.68	\$0.70	\$0.75
Size,	$1$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.80	\$0.85	\$0.90	\$0.95	\$1.05	

Price, per Set of 11,  $\frac{1}{4}$  to 2 in., \$7.75.

**10 INCH BLADES.**

We carry the above line with 10 in. Blades. For prices add one-fourth or 25 per cent to the foregoing prices.

**Fig. 3152, No. 10—MILLWRIGHT CHISELS, with Bevel Edges.****8 INCH BLADES.**

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.69	\$0.72	\$0.75	\$0.78	\$0.80	\$0.85
Size,	$1$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2$
Each,	\$0.90	\$0.96	\$1.00	\$1.07	\$1.15	

Price, per Set of 11,  $\frac{1}{4}$  to 2 in., \$8.95.

**10 INCH BLADES.**

We also carry this line with 10 in. Blades. For prices add one-fourth or 25 per cent to the foregoing prices.

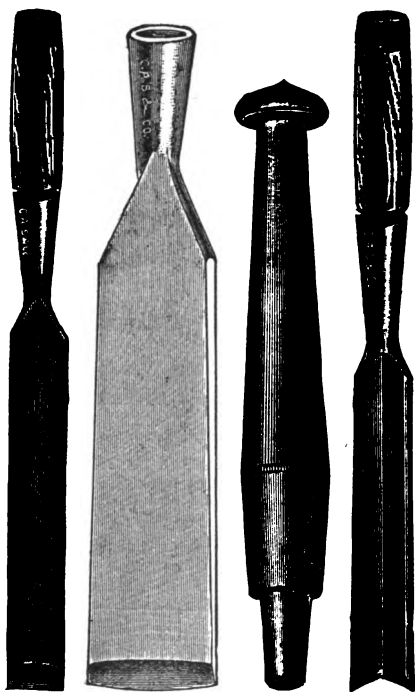
FIG. 3153.  
NO. 17.FIG. 3154.  
NO. 24.FIG. 3155.  
NO. 25.

Fig. 3153, No. 17—**SOCKET FRAMING CHISELS.**

8 INCH BLADES.

This is the regular form of heavy Socket Framing Chisels. These have Leather Tipped Hickory Handles.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
Each,	\$0.39	\$0.39	\$0.39	\$0.41	\$0.43	\$0.47
Size,	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	
Each,	\$0.49	\$0.57	\$0.62	\$0.67	\$0.72	

Price, per Set of 11,  $\frac{1}{2}$  to 2 in., \$5.10.

Fig. 3154, No. 24—**CARPENTER'S SLICK.**

Size,	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4
Each,	\$1.00	\$1.15	\$1.30	\$1.50

Fig. 3155, No. 25—**CORNER CHISEL.**

Corner Chisels are a most difficult class of tools to make. Most of the leading manufacturers will not warrant them. Our Corner Chisels are as near right as it is possible to make them, and

we warrant them fully. These Chisels have Leather Tipped Hickory Handles.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Each,	\$0.65	\$0.82	\$0.90	\$0.93	\$0.97	\$1.08

### BEVEL EDGE CHISELS.

Chisels with Bevel Edges are a decided improvement over the regular style. In this form of chisel the edges are thinner, which enables one to work with greater accuracy in mortises and close places. Besides this, the tool is made lighter, without sacrificing strength to any extent.

### SOCKET GOUGES.

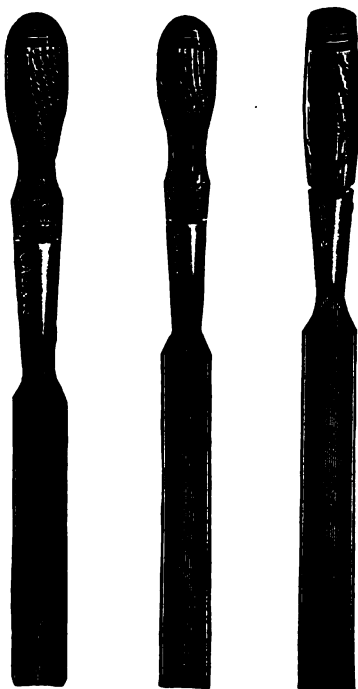
FIG. 3156.  
NO. 18.FIG. 3157.  
NO. 8.FIG. 3158.  
NO. 12.

Fig. 3156, No. 18—**SOCKET FIRMER GOUGES, 6 in. Blades.**

These are furnished with Leather Tipped Hickory Handles and are ground sharp. They are sent out ground with

outside bevel; can furnish them ground inside bevel to order.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{2}$	$2$	
Each,	\$0.35	\$0.39	\$0.41	\$0.46	\$0.52	\$0.55
Size,	$\frac{7}{8}$	$1$	$1\frac{1}{2}$	$2$		
Each,	\$0.60	\$0.64	\$0.70	\$0.78	\$0.82	\$0.85

Price, per Set of 12,  $\frac{1}{2}$  to 2 in., \$6.45.

Fig. 3157, No. 8—LONG SOCKET PARING GOUGES, 8 in. Blades.

These are furnished with Leather Tipped Hickory Handles, and are ground sharp. They are sent out ground with inside bevel; can furnish them ground with outside bevel to order. Our stock of these is in the middle Sweep (see page 653).

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{2}$	$2$	
Each,	\$0.42	\$0.47	\$0.53	\$0.56	\$0.63	\$0.68
Size,	$\frac{7}{8}$	$1$	$1\frac{1}{2}$	$2$		
Each,	\$0.73	\$0.79	\$0.86	\$0.92	\$0.98	\$1.06

Price, per Set of 12,  $\frac{1}{2}$  to 2 in., \$7.85.

Fig. 3158, No. 12—SOCKET FIRMER MILLWRIGHT'S GOUGES.

These are heavy Gouges with Solid Steel Blades; are beveled inside and furnished only in middle sweep (see page 653); 8 in. Blades, Leather Tipped Hickory Handles.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{2}$	$2$	$2\frac{1}{2}$
Each,	\$0.87	\$0.87	\$0.92	\$0.98	\$1.03	\$1.09
Size,	$1$	$1\frac{1}{2}$	$2$	$2\frac{1}{2}$	$3$	$3\frac{1}{2}$
Each,	\$1.20	\$1.30	\$1.45	\$1.60	\$1.75	\$1.90

Price, per Set of 11,  $\frac{1}{2}$  to 2 in., \$12.60.

We also carry these in stock with both 10 and 12 in. Blades. For price of 10 in. Blades add 25 per cent to above list; for price of 12 in. Blades add 50 per cent to above list.

NOTE.—For Millwright Chisels see Fig. 3151.



FIG. 3159.

#### CHISEL AND PLANE IRON GRINDER.

This is an excellent device for the purpose of holding Chisels, Plane Irons and similar tools while being ground. The tool is put in the holder and brought to the right bevel with the adjusting

screw. Nothing is left to do but to bear it on the stone, and it will grind all right without further care. Takes in tools up to 2 $\frac{1}{2}$  in. wide.

Price, each, \$0.70.

NOTE.—This is a good place to say that you won't need a grindstone very much if you use the Whelden Emery Oil Stone, shown elsewhere in catalogue, as this Stone is a combination of the grindstone for fast cutting, and the Arkansas oil stone for whetting. Fact.

#### TANGED OR SHANK CHISELS AND GOUGES.

In making up the line of Chisels and Gouges for this catalogue, we have given first place to the Socket Chisels and Gouges, for the reason that this is the style of which most are sold.

With our best class of mechanics, however, there has always been a demand for the Tanged form of Chisel and Gouge. Being of course deeply interested in this matter, we have during the past few months made a canvass personally and by letter among a great many of the leading wood workers in all sections of the country, and as a result we find that for the general run of carpentry and building work mechanics prefer the Socket tools, while joiners, cabinet makers, pattern makers and those engaged in the finer class of wood-working prefer the Tanged tools, claiming that they are better balanced, and that they hang better and cut nicer. This is especially noticeable in Paring Chisels and Gouges, which have longer blades.

In the Tanged style of Chisels and Gouges we believe that the leading English makes are superior, just as the American Socket Chisels and Gouges are superior to all others. The English makers whose products are best known in this country are W. & S. Butcher, Spear & Jackson, J. Howarth, I. Sorby, and Ward & Payne. The first and second named of these firms have always had a larger trade in this country than the others, their goods being well and favorably known. In England the best known make is Ward & Payne, and they, doubtless, have the highest reputation of any firm in the world. The late Richard Buck (who for many years and up to the time of his death was the owner of the Buck Bros.' concern) once

told the writer that in his judgment the Ward & Payne Edge Tools excelled all others. They are somewhat higher in price, but still the difference is not great, and we can guarantee them as being the very best quality of these goods produced.

All Ward & Payne tools are stamped with the Trade or Corporate mark



In the United States they are commonly known as the "Ward" Chisels and Gouges. Every tool with this mark is fully guaranteed to be absolutely first-class.

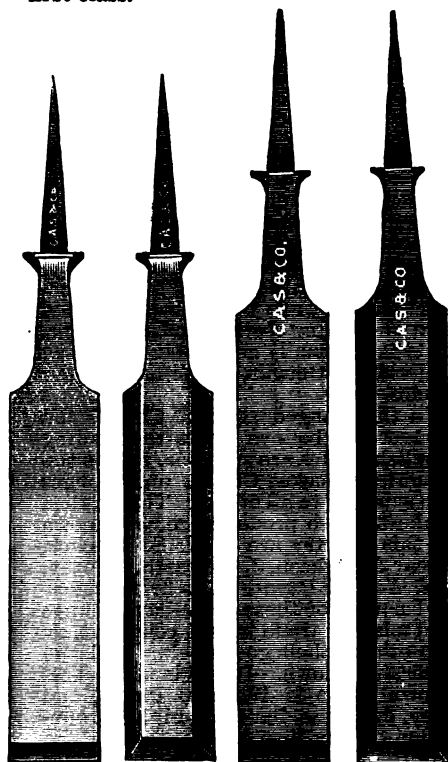


FIG. 3160. NO. 1. FIG. 3161. NO. 2. FIG. 3162. NO. 19. FIG. 3163. NO. 20.

**Fig. 3160, No. 1—TANGED FIRMER CHISELS.**

1 in. is about 6 in. long from Bolster.  
2 " " " 7½ " " "

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1½	2
Each,	\$0.15	\$0.15	\$0.16	\$0.19	\$0.20	\$0.22

Size,	$\frac{1}{2}$	1	1½	1¾	2
Each,	\$0.25	\$0.27	\$0.37	\$0.45	\$0.55 \$0.66

Price, per Set of 12,  $\frac{1}{4}$  to 2 in., \$3.40.

**Fig. 3161, No. 2—TANGED FIRMER CHISELS, with Bevel Edges.**

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1½	2
Each,	\$0.25	\$0.26	\$0.30	\$0.31	\$0.33	\$0.37

Size,	1	1½	1¾	1½	2
Each,	\$0.39	\$0.50	\$0.60	\$0.70	\$0.80

Price, per Set of 11,  $\frac{1}{4}$  to 2 in., \$4.75.

**Fig. 3162, No. 19—TANGED PARING CHISELS.**

1 in. is about 9½ in. long from Bolster.  
2 " " " 11½ " " "

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1½	2
Each,	\$0.25	\$0.25	\$0.26	\$0.28	\$0.32	\$0.37

Size,	$\frac{1}{2}$	1	1½	1¾	2
Each,	\$0.39	\$0.47	\$0.64	\$0.77	\$0.90 \$1.13

Price, per Set of 12,  $\frac{1}{4}$  to 2 in., \$5.80.

**Fig. 3163, No. 20—TANGED PARING CHISELS, with Bevel Edges.**

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1½	2
Each,	\$0.40	\$0.41	\$0.43	\$0.47	\$0.52	\$0.57

Size,	1	1½	1¾	1½	2
Each,	\$0.65	\$0.84	\$0.97	\$1.15	\$1.38

Price, per Set of 11,  $\frac{1}{4}$  to 2 in., \$7.60.



FIG. 3164, NO. 26½—DUCK'S BILL MORTISE CHISEL.

This is a very heavy tanged Chisel; it is of the finest quality, being of the Ward & Payne (Sheffield) make.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1½	2
Each,	\$0.55	\$0.55	\$0.60	\$0.65	\$0.70	\$0.75



FIG. 3165, NO. 50—HANDLED BUTT CHISEL. Price, \$0.60.

This is made in but one size, the length of the Blade being from 2½ to 3



in. It is used by carpenters for putting on door butts, being much lighter and handier than the ordinary long chisel.

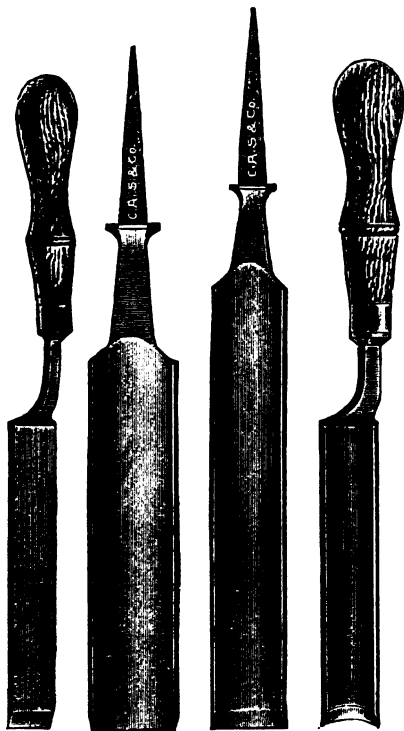


FIG. 3166. FIG. 3167. FIG. 3168. FIG. 3169.  
NO. 23. NO. 3. NO. 7. NO. 7 1/2.

Fig. 3166, No. 23—BENT SHANK PARING CHISELS.

For many special purposes the Bent Shank Chisels and Gouges will be found extremely useful; they can also be used to advantage on ordinary work. The average length of blade is 8 in., and they are all handled.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	1	1 1/2	1 3/4	2
Each,	\$0.50	\$0.58	\$0.72	\$0.90	\$1.10	\$1.35

Fig. 3167, No. 3—TANGED FIRMER GOUGE, about 6 in. long from Bolster.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Each,	\$0.18	\$0.18	\$0.19	\$0.22	\$0.23	\$0.26
Size,	$\frac{1}{2}$	1	1 1/2	1 1/2	1 3/4	2
Each,	\$0.30	\$0.32	\$0.43	\$0.53	\$0.65	\$0.80

Price, per Set of 12,  $\frac{1}{2}$  to 2 in., \$4.12.

## PARING GOUGES.

Fig. 3168, No. 7—TANGED PARING GOUGE, about 9 in. long from Bolster.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Each,	\$0.42	\$0.42	\$0.43	\$0.45	\$0.48	\$0.53

Size,	$\frac{1}{2}$	1	1 1/2	1 1/2	1 3/4	2
Each,	\$0.56	\$0.63	\$0.83	\$0.96	\$1.16	\$1.39

Price, per Set of 12,  $\frac{1}{2}$  to 2 in., \$8.00.

FLAT SWEEP.

MIDDLE SWEEP.

REGULAR SWEEP.

We carry the Paring Gouges in three different Sweeps, Flat, Middle and Regular. All orders are filled with Middle Sweep unless otherwise specified, as this Sweep is the most generally used.

Paring Gouges are bevelled on the inside.

A letter received from a pattern maker in one of the largest Western shops states, "I do not see how any one working on fine pattern work can use the Socket Paring Chisels or Gouges. the Shank tools are so much better in every way for this class of work. There are used in our shop among the different men at least 200 of the Ward Chisels and Gouges, and I have never yet come across a poor one."

Fig. 3169, No. 7 1/2—BENT SHANK PARING GOUGES.

These we carry in stock only in the Middle Sweep, bevelled inside; can furnish in Flat or Regular Sweep to order. The average length of Blade is 8 in., and they are all handled.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	1	1 1/2	1 1/2	2
Each,	\$0.65	\$0.73	\$0.89	\$1.10	\$1.25	\$1.65

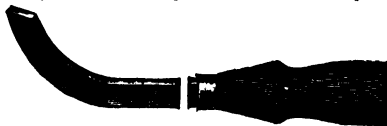


FIG. 3170.

NO. 38—FOX LOCK MORTISING TOOL.

This is especially made for mortising locks into doors, and its peculiar shape adapts it for this class of work. It saves considerable boring, cuts away the sections between the holes, and cleans out the bottom of the mortise in about half the time that it takes with an ordinary chisel. Price, each, \$0.75.

## WOOD TURNERS' TOOLS.

Our regular stock of Turning Chisels and Gouges is of the Ward & Payne brand, and are designated as Extra Long, the one inch tools being a trifle over 11 inches in length, while the length of standard tools is about 10 in.

Turning Chisels and Gouges as a rule receive very severe service. If you are not satisfied with the tools you have been using, we would be pleased to have you try these.



FIG. 3176. TURNING CHISEL.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2
Each,	\$0.24	\$0.26	\$0.28	\$0.30	\$0.33	\$0.35
Size,	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	
Each,	\$0.40	\$0.50	\$0.65	\$0.75	\$0.90	



FIG. 3177. TURNING GOUGE.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2
Each,	\$0.29	\$0.32	\$0.35	\$0.37	\$0.43	\$0.48
Size,	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	
Each,	\$0.54	\$0.68	\$0.85	\$1.05	\$1.25	

Handle for Turning Tools, see Index.

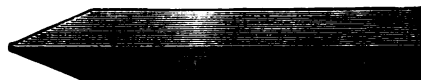


FIG. 3178. PARTING TOOL.

This tool is from 8 to 9 in. in length.  
Each,  $\frac{1}{4}$  size, \$0.40;  $\frac{1}{2}$ , \$0.45; 1, \$0.50.

## "HUSTLER" TURNING TOOLS.

The "Hustler" Chisel is used for cutting in on the square or round, and heading work. By its peculiar shape it will accomplish from 25 to 50 per cent more work than other tools. The Hustler is beveled from top to bottom, and is grooved on top the full length of the blade, with a flange on each side, leaving a lip projecting slightly beyond the edge of the tool; the lips cutting across the grain, while the edge of tool cuts with the grain by the same motion of the hands.

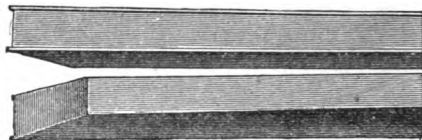


FIG. 3179. "HUSTLER" CHISEL.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$
Each,	\$0.50	\$0.55	\$0.60	\$0.65	\$0.80
Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$
Each,	\$0.95	\$1.10	\$1.25	\$1.25	

FIG. 3180. "HUSTLER" BEADER.

These are adapted for Face Plate work. Like the Hustler, they are tapered from top to bottom to give clearance.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2
Each,	\$0.35	\$0.35	\$0.35	\$0.40	\$0.45	\$0.50
Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2
Each,	\$0.55	\$0.65	\$0.75	\$0.85	\$1.00	

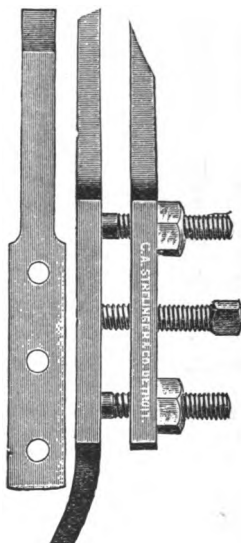


FIG. 3181.



FIG. 3182.

Fig. 3182, V SHAPE TENONER. We recommend our V Shape Tenoner to all Wood Turners.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1
Each,	\$1.40	\$1.65	\$1.90	\$2.25

Fig. 3181, SCREW TENONER, \$2.75.

The Screw Tenoner will cut uniform tenons in both hard and soft wood, and

is easily adjusted to any sizes up to 1½ in. The cutting blade is from 2½ to 2¾ in. long from shoulder, and ¼ and ⅜ in. wide, the bottom prong being a little narrower than top blade to give clearance.

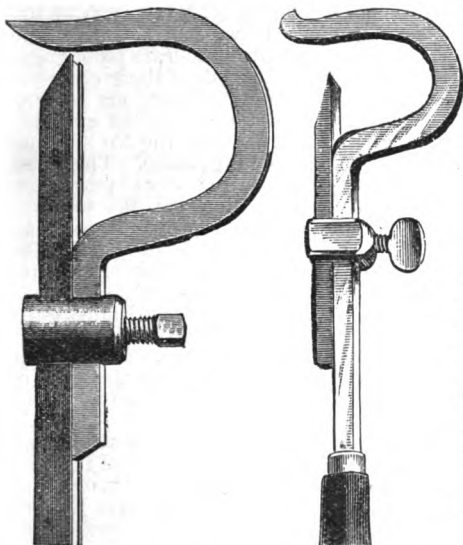


FIG. 3183.

FIG. 3184.

FIG. 3183, COMBINATION HUSTLER & SIZER.

A heavy, strong tool, which can be used with ordinary chisel in place of Hustler. Half-inch Hustler is supplied with it; smaller sizes can be used.

Price, complete, \$2.50.

FIG. 3184, TURNERS' SIZER. Small, opening to 1½ in., each, \$1.15; Large, opening to 5 in., each, \$1.60.

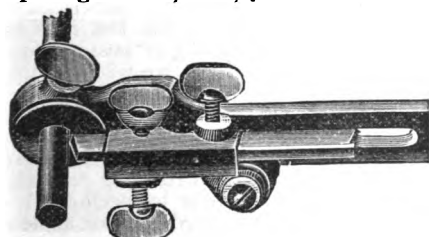


FIG. 3185. LATHE DOWEL TOOL.

This is a handy tool for making round rods of wood, for pins, dowels, or any other purpose. It can be used by hold-

ing it in the hand, or can be fastened in a Slide Rest; has interchangeable bushings, suitable for sizes ¼, ⅜, ½, ⅝, ¾, 1, and 1½ in. diam.

Price, complete with bushings and chucks for holding work, \$3.00. Chuck for pointing rod, \$1.00 extra.

For Power Dowel Rod Machines, see Index.



FIG. 3186.

NO. 51—CHIP NAILING CHISEL.

In covering up nail heads on finished work it has usually been the practice to fill the hole with either putty or wax. With this tool the work can be done in a simple way, leaving the job in good condition. It is operated by slipping the Chisel in the wood, thus raising a small chip. A brad or light nail is then driven in, the bottom of the chip touched with glue and pressed back into place, leaving the wood apparently in its natural condition.

One size, ½ in. wide, price, \$0.55; postage, if sent by mail, \$0.05.

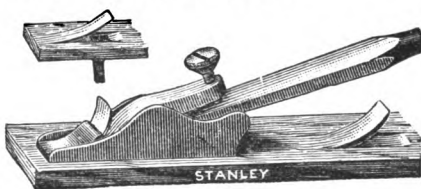


FIG. 3187. CHISEL GAUGE.

This little tool is used in connection with a ½ inch chisel for the same purpose as the Chip Nailing Chisel, Fig. 3186.

Attach to a ½ in. Chisel (with beveled edge up) and a shaving of any desired thickness can be raised, for blind-nailing or for inlaying wood strips in ornamental surface work. Chisel is not included in price.

Price, \$0.20; postage, 3 cts.

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## RUSTY, SHOP-WORN AND OBSOLETE TOOLS.

The following letter is printed in order to introduce a subject that is of interest to Tool users:

CINCINNATI, O., Jan. 13, 1897.

CHAS. A. STRELINGER & Co.

Dear Sirs:—I have received the set of tools ordered from you last week. The railroad men must have left the box out in a wet place, or in a storm. Some of the packing was damp, and three of the paring chisels were badly rusted, but nothing else was injured. I take a good deal of pride in my tools, and those rusty chisels worry me. Tried to clean them with emery paper, but the rust had eaten in and I couldn't get it out. Every time I go to the chest those chisels stick out like a sore thumb. There are 217 tools in all, and with this exception every tool is as bright and fresh as a new pin, and they are the handsomest lot I have ever seen—not a shop-worn tool in the lot. Can I exchange these rusty chisels for others? Please let me know what you can do for me.

Truly yours,

HENRY BAUSCH.

We had Mr. Bausch return the three chisels, and refinished them. There is no doubt but that he expressed the feelings of a great many mechanics when he referred to these three rusty tools sticking out like a "sore thumb."

### RUSTY & SHOP-WORN TOOLS—

There is considerable difference between a Misfortune and a Fault. If a man spills a lot of gravy on his Sunday-go-to-meeting coat, or accidentally leaves his steel square out on the grass over night (unless it happens to be one of our "Rustless Finish" steel squares), it is his Misfortune. But if he were to buy a new coat with a big grease spot on it, or a steel square that was badly rusted, that would be his Fault.

It is a difficult matter to remove rust from a polished surface. In order to do it successfully, the rust must be ground out, just as a cancer must be cut out.

EVERY TOOL WE SEND OUT IS INSPECTED CAREFULLY, AND NO RUSTY TOOLS ARE ALLOWED TO LEAVE OUR PLACE.

OBSOLETE TOOLS.—By this we mean tools that are out-of-date, and

tools that do not contain the latest improvements. In the past ten years there have been many improvements made, and changes are constantly taking place—nearly all in the way of improvements. If we had the time and space, we might enumerate from goods in our stock hundreds of these changes, and many, though slight, are of considerable importance. As an example or two, we might name the No. 45 Combination Plane (Fig. 3055). The price ten years ago was 40 per cent more than it is at present, and yet the tool has been changed and improved in so many ways that it is worth fully twice as much as then. The little lever that provides for the lateral adjustment of cutters in the Baily Bench Planes costs but a few cents extra, yet it enhances the value of the tool by at least 25 per cent, and so on through all the lines of Planes, Braces, Squares, Boring Tools, Screw Drivers, etc., etc.

Now, as a matter of fact, a very large percentage of the tools carried in stock and sold by small dealers throughout the country, and many of the jobbers as well, are out-of-date tools—tools that have been carried in stock for years, and are lacking in these improvements.


The tools we send out can always be depended upon as being of the latest design, the newest forms, and containing all recent improvements, and there is no reason for the reader of this catalogue to put up with "Out of Date" tools when he can have the latest and best at prices that are the same—or less.

### WHY NOT?

For fear that some of our readers might be tempted to ask the reasons why we do not send out rusty, shop-worn or obsolete tools, we will explain: First, all tools are inspected before being sent out (We know of no other dealers who have an inspector for this purpose). Second, being manufacturers of tools, we have facilities for refinishing such tools as may by accident become rusty. And third, as soon as new tools are brought out or improvements made in the older styles, we dispose of our stock of old style tools at reduced prices, in our own city, so that we do not have to send them out.

## CARVING TOOLS.

In our experience of nearly thirty years in handling Carving Tools, we have sold nearly all the leading brands, both the American and English. Included among these are the following: S. J. Addis, J. B. Addis, Ward & Payne, Henry Taylor, Buck Bros., Charles Buck, and D. R. Barton. It would be hard to say which is the best, if indeed there be any *best*. We have no doubt, however, that the leading English makes are superior to the American, and we believe that by far the larger number of Carving Tools sold in this country are imported. Occasionally we find a carver who declares a preference for one of the American brands, but such occasions are rare.

The brand best known in this country is the S. J. Addis, with this trademark,  and the writer, on a recent trip through Europe, found that this brand was the best and most favorably known throughout Germany, France and England, while in some of the upper European countries the Henry Taylor (Acorn) brand was very popular. The J. B. Addis brand is quite well known in this country, many carvers declaring

them to be better than the S. J. Addis, but we see no reason why this should be so. As a matter of fact, both S. J. and J. B. Addis have been dead a long time, and for many years Ward & Payne, who are considered the leading concern in the manufacture of edge tools in England, have owned the title and trademark, and have made the tools that were sent out under the S. J. Addis brand, also making the Ward & Payne brand of Carving Tools, so that they are both identical. We do not remember the name of the makers of the J. B. Addis' tools, but the investigations we made failed to prove that this brand was considered as favorably in England as the other.

The variety in Carving Tools is so great that it would not pay us to carry two lines, and our stock at the present time is of the S. J. Addis brand.

On pages 658 and 659 will be found cuts of the sweeps of the more common sizes and styles. There is nothing larger shown than  $\frac{1}{2}$  inch, but in most of the commonly used sweeps we carry in stock the 1,  $1\frac{1}{2}$ ,  $1\frac{1}{4}$ ,  $1\frac{3}{4}$  and  $1\frac{1}{2}$  inch sizes, and these are priced in following table:

## PRICE LIST OF CARVING TOOLS.

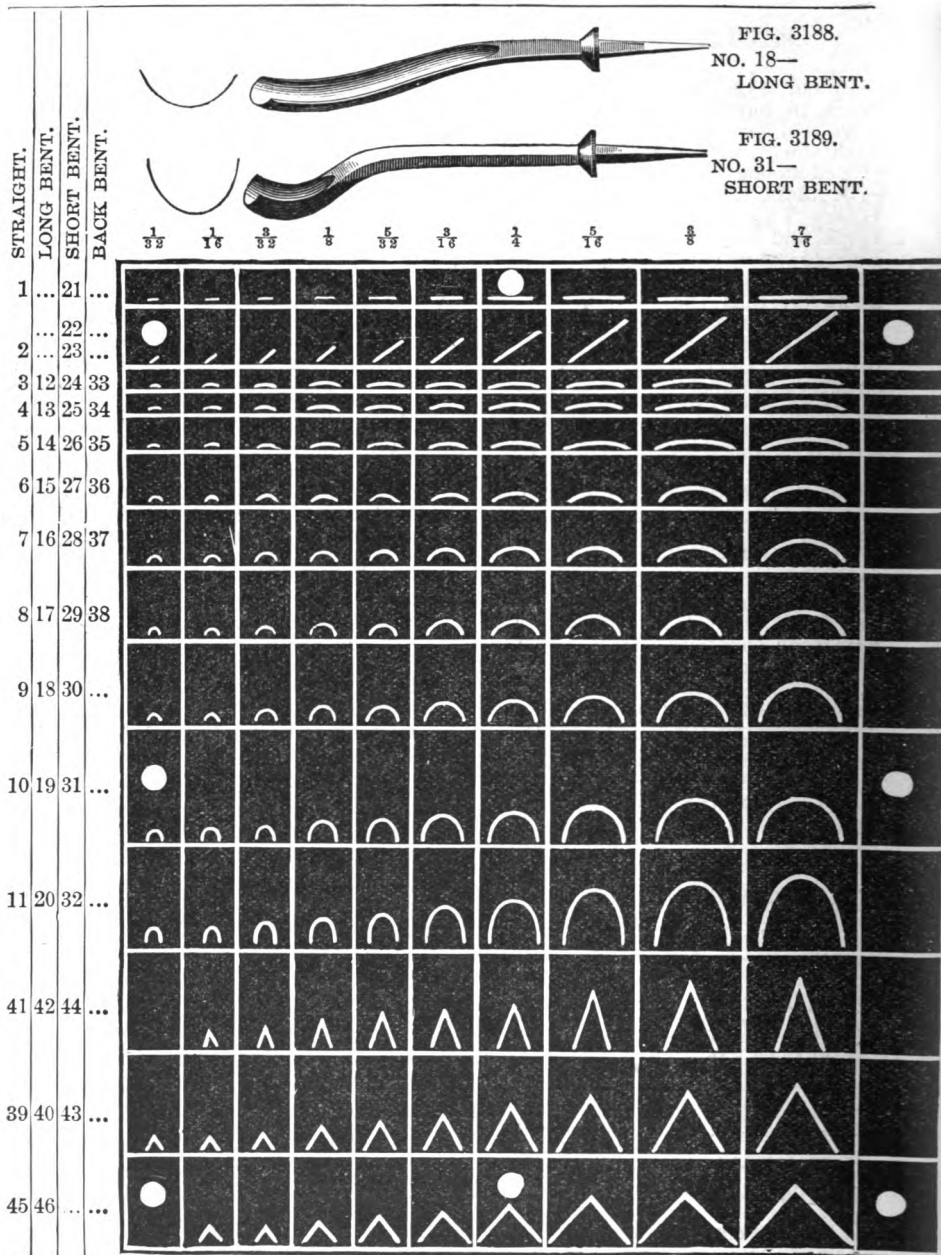
(For Sets of Carving Tools see pages 660 and 661.)

All Sizes under  $\frac{1}{2}$  Inch take the same price as  $\frac{1}{2}$  Inch.

All Sizes up to	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{4}$	2
Nos. 1 & 2, each,	\$0.20	\$0.20	\$0.20	\$0.24	\$0.27	\$0.29	\$0.35	\$0.39	\$0.42	\$0.47	\$0.57	\$0.69
" 3 to 9, "	.24	.24	.24	.28	.31	.33	.40	.45	.49	.55	.67	.82
" 10 "	.27	.27	.27	.30	.40	.47	.54	.67	.80	1.00	1.20	1.40
" 11 "	.27	.30	.30	.40	.47	.54	.67	.80	1.00	1.20	1.40	1.67
" 12 to 18, "	.29	.29	.29	.32	.44	.50	.60	.67	.80	.94	.....	.....
" 19 & 20, "	.29	.35	.35	.44	.50	.60	.67	.80	.94	1.14	.....	.....
" 21 to 23, "	.25	.25	.25	.25	.35	.44	.50	.60	.67	.80	.....	.....
" 24 to 30, "	.29	.29	.29	.32	.44	.50	.60	.67	.80	.94	.....	.....
" 31 & 32, "	.29	.35	.35	.44	.50	.60	.67	.80	.....	.....	.....	.....
" 33 to 38, "	.29	.29	.29	.32	.44	.50	.60	.67	.80	.94	.....	.....
" 39, 41 & 45, "	.35	.40	.44	.55	.69	.85	.....	.....	.....	.....	.....	.....
" 40, 42, 43, 44, "	.39	.43	.47	.58	.72	.89	.....	.....	.....	.....	.....	.....

Average cost of Postage is 3 cts. on sizes up to  $\frac{1}{2}$  inch; 5 cts. from  $\frac{3}{4}$  to 1 inch, and 7 cts. above 1 inch.

For Sizes and Sweeps see pages 658 and 659.



For prices see page 657.

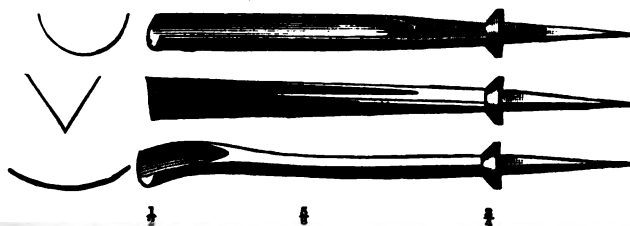
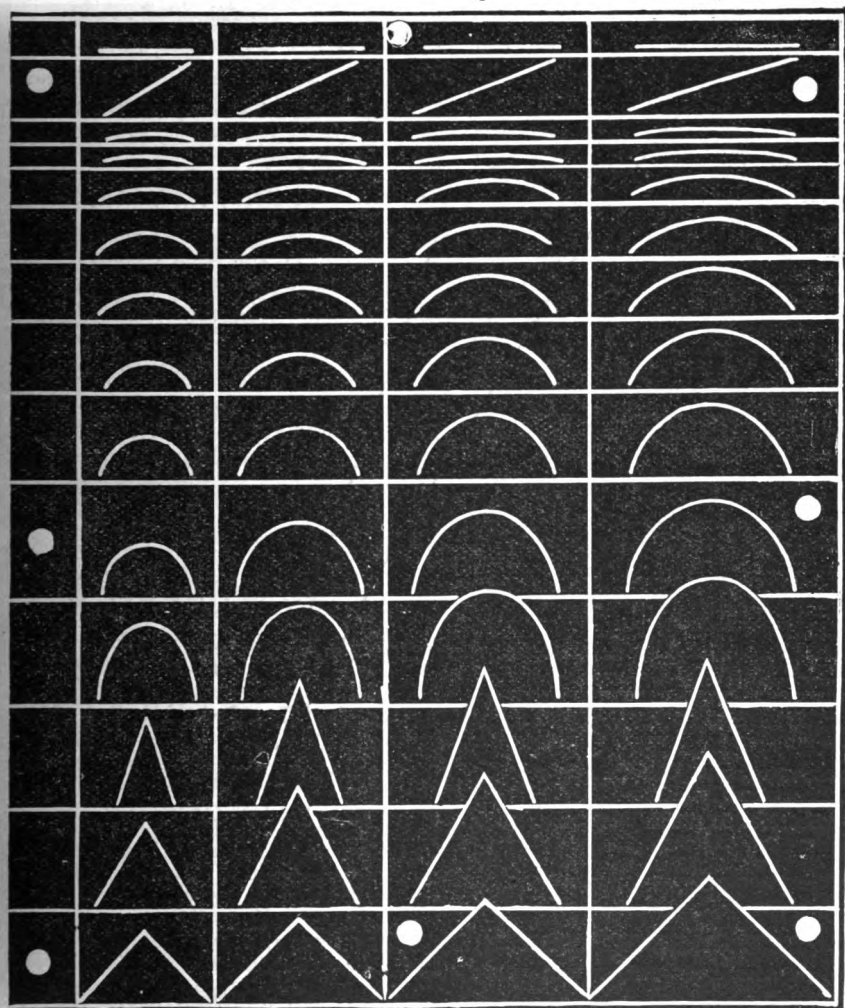


FIG. 3190.  
NO. 9—STRAIGHT.

FIG. 3191.  
NO. 39—STRAIGHT.

FIG. 3192.  
NO. 36—BACK BENT.



For prices see pages 657.

## AS TO THE GENERAL UTILITY OF CARVING TOOLS.

The utility of Carving Tools for general use is growing to be more appreciated. It used to be considered that Carving Tools were intended to be used only for wood carving, and by mechanics occupying a distinct field, whose business was that of wood carving and nothing else.

At the present time more than one-half of the Carving Tools we sell are used by pattern makers, cabinet makers and carpenters. There are so many cases where in general work the Carving Chisel and Gouge can be used to a great deal better advantage than the regular chisel or gouge. The reasons for this are, first, the Carving Tool is lighter. A 1 inch socket gouge weighs with handle about 12 ounces; a 1 inch carving gouge weighs with handle about 5 ounces. Being thus much lighter, the carving gouge is easier to use. Second, the regular gouge measures about 15 inches over all, the carving gouge 10 inches. This makes it more convenient to handle. Third, the quality of steel and temper in carving tools average higher than in regular chisels and gouges. Fourth, in using regular gouges one is restricted to certain sweeps. In the carving gouges the range is almost unlimited, as will be seen in cuts on pages 658 and 659.

See Index for  
CARVERS' BENCH,  
CARVERS' FILES,  
CARVERS' MALLETS,  
CARVING TOOL HANDLES,  
CARVING TOOL OIL STONES.

## REGULAR CARVING TOOLS, IN SETS.

These are our regular Carving Tools, with Rosewood Handles.

Set No. 10,	\$5.75,	12 tools.
" " 20,	11.50,	24 "
" " 30,	17.25,	36 "
" " 40,	23.00,	48 "
" " 50,	34.50,	72 "

## AMATEUR CARVING TOOLS.

These tools are all of the same quality and style as the regular Carving Tools, are lighter and smaller, and adapted for use of ladies and amateurs, and are used

extensively in Sloyd work. They are all fitted with Rosewood Handles, and are ground sharp ready for whetting. The following is a list of the different assortments, with the tools contained therein. Single tools of any of these sizes, \$0.40, post-paid.

### ASSORTMENT NO. 1, \$2.20, 6 TOOLS.

One each—No. 1,  $\frac{3}{4}$ ; No. 5,  $\frac{1}{2}$ ; No. 8,  $\frac{3}{4}$ ; No. 11,  $\frac{1}{4}$ ; No. 29,  $\frac{1}{8}$ ; No. 39,  $\frac{1}{8}$  in.

### ASSORTMENT NO. 2, \$4.40, 12 TOOLS.

One each—No. 1,  $\frac{1}{2}$  and  $\frac{1}{4}$ ; No. 5,  $\frac{1}{2}$  and  $\frac{3}{4}$ ; No. 8,  $\frac{1}{2}$  and  $\frac{1}{4}$ ; No. 11,  $\frac{1}{4}$  and  $\frac{1}{8}$ ; No. 29,  $\frac{1}{8}$ ; No. 32,  $\frac{1}{8}$ ; No. 39,  $\frac{1}{8}$ ; No. 41,  $\frac{3}{8}$  in.

### ASSORTMENT NO. 3, \$6.60, 18 TOOLS.

One each—No. 1,  $\frac{1}{2}$  and  $\frac{1}{4}$ ; No. 2,  $\frac{3}{4}$ ; No. 5,  $\frac{1}{2}$  and  $\frac{3}{4}$ ; No. 8,  $\frac{1}{4}$  and  $\frac{1}{8}$ ; No. 11,  $\frac{1}{8}$  and  $\frac{1}{4}$ ; No. 21,  $\frac{3}{8}$ ; No. 26,  $\frac{1}{2}$ ; No. 29,  $\frac{1}{4}$  and  $\frac{3}{8}$ ; No. 32,  $\frac{1}{4}$ ; No. 39,  $\frac{1}{4}$ ; No. 41,  $\frac{3}{8}$  in.

### ASSORTMENT NO. 4, \$8.80, 24 TOOLS.

One each—No. 1,  $\frac{1}{2}$  and  $\frac{1}{4}$ ; No. 2,  $\frac{3}{4}$ ; No. 5,  $\frac{1}{2}$  and  $\frac{3}{4}$ ; No. 8,  $\frac{1}{2}$  and  $\frac{1}{4}$ ; No. 11,  $\frac{1}{8}$  and  $\frac{1}{4}$ ; No. 21,  $\frac{3}{8}$ ; No. 26,  $\frac{1}{2}$  and  $\frac{3}{4}$ ; No. 29,  $\frac{1}{4}$  and  $\frac{3}{8}$ ; No. 32,  $\frac{1}{4}$  and  $\frac{3}{8}$ ; No. 39,  $\frac{1}{4}$ ; No. 41,  $\frac{1}{2}$ ; No. 43,  $\frac{1}{8}$ ; No. 44,  $\frac{1}{2}$  in.

### ASSORTMENT NO. 5, \$13.20, 36 TOOLS.

One each—No. 1,  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{1}{8}$ ; No. 2,  $\frac{1}{8}$  and  $\frac{3}{8}$ ; No. 5,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $\frac{1}{4}$ ; No. 8,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{8}$  and  $\frac{1}{8}$ ; No. 11,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{1}{2}$ ; No. 21,  $\frac{1}{8}$  and  $\frac{3}{8}$ ; No. 26,  $\frac{1}{2}$  and  $\frac{3}{4}$ ; No. 29,  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{1}{2}$ ; No. 32,  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{3}{8}$ ; No. 39,  $\frac{1}{4}$  and  $\frac{3}{8}$ ; No. 41,  $\frac{1}{2}$  and  $\frac{3}{8}$ ; No. 43,  $\frac{1}{8}$ ; No. 44,  $\frac{1}{2}$  in.

## BOOKS ON CARVING.

The two books named here are intended for amateurs, and will be found very complete and useful.

THE ARTS OF WOOD CARVING & PYROGRAPHY, with very complete illustrations. Price, \$0.60 post paid.

HAND BOOK OF GEOMETRICAL WOOD CARVING, with illustrations, by Gustaf Larsson. Price, \$0.50 post paid.



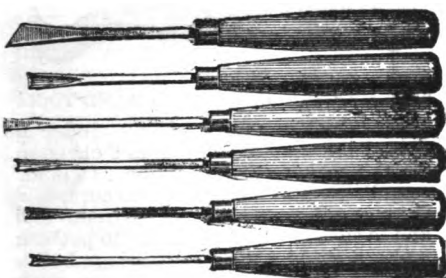
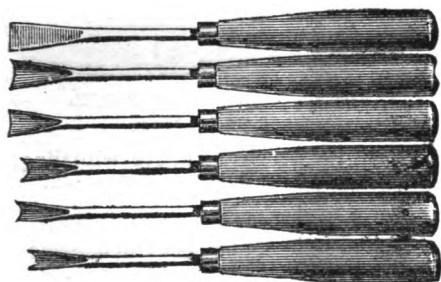
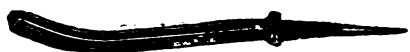


FIG. 3193. CHIP CARVING TOOLS.

In Sets of 12, Boxwood Handles, per Set, \$4.40.



No. 47.



No. 48.

FIG. 3194. MACARONI TOOLS.

Sizes  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $1$ ; price, each, \$0.50.

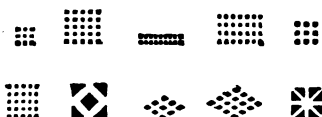


FIG. 3195. CARVERS' PUNCHES.

Price, any style, each, \$0.20.



FIG. 3196. WOOD CARVERS' SCREWS.

No. 1, \$1.50,  $\frac{1}{8}$  diam. x 8 in. long.  
 " 2, 1.75,  $\frac{1}{4}$  " x 8 " "  
 " 3, 2.00,  $\frac{3}{8}$  " x 10 " "

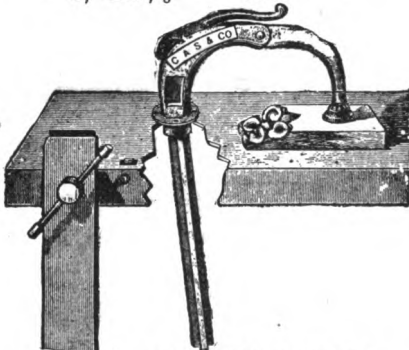


FIG. 3197. ADJUSTABLE CLAMP.

This device is especially adapted for Carvers and other Wood Workers. Holds work firmly on bench while being operated upon. Can be set instantly, the adjustable tips conforming to any unevenness of the work. Has two ferules and wrought iron washers, which can be placed in the bench to suit the operator. Is so constructed that it will firmly hold any material, from thin veneer to a block ten inches thick; is made of malleable iron, very strong, and is neatly japanned. Price, \$1.50.

### CARVERS' KNIVES.

While we give these Knives the general title of Carvers' Knives, they are useful not only for wood carvers, but pattern makers and all those engaged in fine work on wood or plaster. In most cases they are intended to take the place of a pocket-knife for fine work. Pocket-knives are used for so many purposes that they are rarely sharp and in order—that is—most pocket-knives; being used one moment for cutting wood, the next for cutting lead or tin, and the next, perhaps, for cutting an apple, lemon or some fruit, the acid of which destroys the edge.

These Knives are made of the finest

steel, and we aim to have the temper as perfect as is possible. The lengths given are over all, and an idea of the size can be gained by this. Postage on any of these is 5 cents.



Fig. 3198. No. 2, \$0.45, 6½ in. long.



Fig. 3199. No. 4, \$0.45, 5½ in. long.



Fig. 3200. No. 9, \$0.45, 6 in. long.



Fig. 3201. No. 1, \$0.40, 7 in. long.



Fig. 3202. No. 5, \$0.40, 6 in. long.  
Set of 5, above styles, which are the most commonly used, \$2.00.



Fig. 3203. No. 11, \$0.35, 6½ in. long.



Fig. 3204. No. 12, \$0.35, 6½ in. long.



Fig. 3205. No. 13, \$0.40, 6½ in. long.



Fig. 3206. No. 14, \$0.45, 6½ in. long.

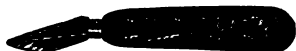


Fig. 3207. No. 21, \$0.40, 5½ in. long.  
Set of 10, above numbers, \$3.75.



FIG. 3208. SWEDISH KNIFE.

\$0.45, 7½ in. long.

Used for bench work, for whittling, and in Sloyd (manual training) work.

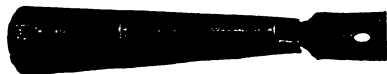


FIG. 3209.

#### THE MIGGETT UNIVERSAL HAND TOOL.

This tool staggers along under a pretty big name. We didn't christen it; the makers are to blame. It is for rounding and chamfering corners, is a simple, efficient and useful little tool and is sold quite extensively to pattern makers, cabinet makers, carriage builders, etc. Is made in five sizes, with radius of ¼, ⅜, ½, ¾ and 1 in.; length over all, 5½ in. Price, each, \$0.40; per Set, \$1.70 post paid.



#### FIG. 3210. PATTERN MAKERS' KNIVES.

This tool is very popular among pattern makers and picture framers for cutting thin stuff. It is very strong, and will be found of value for many classes of work. The handle is of rosewood and brass, nickel plated, and is 4½ inches long; blades are 7 inches long, ¼ inch wide and about ⅛ thick; weight 6 oz.

Handle, with one Blade, \$1.20; Handle only, \$0.90; Blades, only, \$0.30.

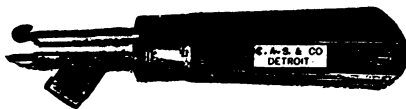


FIG. 3211.

#### RASE KNIFE OR TIMBER SCRIBE.

Large size (see cut), \$1.00. Small size similar to cut, but without cutter on side, \$0.75. Pocket Rase Knife, \$0.75.

## GLASS CUTTERS.

The Wheel Glass Cutter has established itself as a most useful tool. The main trouble with the majority of Wheel Glass Cutters sold is, that they are made up for sale by peddlers and department stores, and are so poorly and cheaply made as to be of very little account. The line of Cutters we show here is altogether the best line we know of. The cutters are carefully hardened and ground, and every tool is tested before leaving the factory. As a consequence, they are higher in price than others. However, the price is not very high, and if you use a tool of this kind it might pay you to try one. Prices include postage.



FIG. 3212. NO. 1 TURRET HEAD.

No. 1 Turret Head, 6 cutters, nicked throughout, rosewood finished handles. Each, \$0.35; Doz., \$3.25.

No. 2 Turret Head, 6 cutters, nicked throughout, putty knife combined. Each, \$0.35; Doz., \$3.25.

The wheels of the Turret Head Cutters may be removed and the cutters replaced in a moment's time. Extra Cutters \$0.50 per Doz.

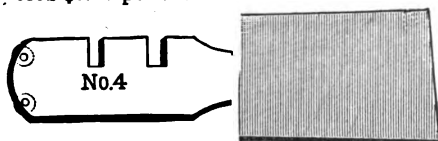


FIG. 3213. NO. 4 DOUBLE CUTTER.

No. 3 Double Cutter, polished frame, enameled wood handle. Each \$0.18; Doz., \$1.63.

No. 4 Double Cutter, polished frame, putty knife combined. Each, \$0.18; Doz., \$1.63.



FIG. 3214. CIRCLE SWEEP CUTTER.

This is used for cutting circles, rounding lights, etc. The base is of hard

wood, with rubber bottom to prevent slipping. No. 2, suitable for circles from 3 to 20 inches, \$0.35. No. 3, for circles from 3 to 40 inches, \$0.45; postage on either, 10 cents. Extra Cutter Heads, \$0.15 each.

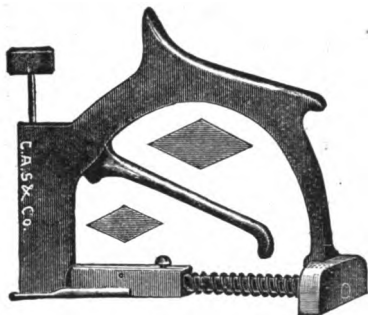


FIG. 3215. DIAMOND POINT DRIVER.

This machine for glazing sash saves time and money. By its use one may accomplish as much work in ten minutes as by the ordinary method in an hour (better work too). The points are cemented together in columns of about 100 each, and cost but little more (by actual count) than ordinary glaziers' points.

No. 1 machine, for points  $\frac{1}{8}$  in. long, \$2.00; No. 2 machine, for points  $\frac{1}{4}$  in. long, \$3.00. No. 1 machine is  $6\frac{1}{2}$  in. long; No. 2,  $8\frac{1}{2}$  in. long. Points are size shown in cut. No. 1 Points, per package (5000), only \$0.50; No. 2 Points, per package (4000), \$0.50. Special price on Points in large quantities.

## INSURANCE.

We have before us two letters just received; one from Maryland, one from Illinois. Both state that the writers have lost their tools by fire, and no insurance. Not one mechanic in five hundred insures his tools against fire. The cost of insurance is, in most cases, a very small item compared with the loss of the tools. Only a very rich man can afford to be without insurance. Consult an insurance agent.

## POCKET KNIVES.

We carry in stock some two hundred varieties of Pocket Knives, and yet at least 50 per cent of our sales are of the patterns shown here. They are not "polished with diamond dust", are not "file-tested", are not made of "razor steel", nor will they "split a hair". They are, however, of the highest quality, are handsomely finished, are the same brands and styles that we have sold for twenty-five years, and if your dealers are not able to satisfy you, we would be pleased to sell you. The prices include postage.



1730. 1731. 1732. 1733. 1734. 1735. 1736.  
Fig. 1730 is a light Pen-knife, suitable for either ladies' or gentlemen's use; length when closed,  $2\frac{1}{4}$  inches; has three blades. Ivory or Stag handle, \$0.90; Tortoise Shell, \$1.15; Pearl, \$1.25.

Medium Pen-knife, style of Fig. 1730; length when closed,  $3\frac{1}{4}$  inches. Ivory or Stag handle, \$1.10; Tortoise Shell, \$1.30; Pearl, \$1.45.



FIG. 1737.

Fig. 1737 represents an Electricians' knife. This is an uncommonly useful tool for those who do electrical work. It has one regular knife blade, and another blade especially for scraping wire. This blade has also a sharp edge for cutting the covering of wire, and forms a substantial screw driver. Length of handle,  $3\frac{1}{4}$  in.; length of blade,  $2\frac{1}{4}$ . Price, \$0.85.

Fig. 1731, medium Pen-knife; length,  $3\frac{1}{4}$  inches. Ivory, Horn or Stag handle, two blades, \$0.70; three blades, \$0.95. Pearl, two blades, \$1.00; three blades, \$1.35.

Heavy Pen-knife, style of Fig. 1731; length,  $3\frac{1}{4}$  inches. Ivory, Horn or Stag handle, two blades, \$0.95; three blades, \$1.20. Pearl, two blades, \$1.35; three blades, \$1.75.

Fig. 1732 is a heavy Pen-knife; length,  $3\frac{1}{4}$  in. Ivory, Horn or Stag handle, \$1.00, Pearl, \$1.40.

Fig. 1733 is a heavy Pen-knife; length,  $3\frac{1}{4}$  in. Ivory, Horn or Stag handle, \$1.00; Pearl, \$1.50.

Fig. 1735 is a light Jack-knife; length,  $3\frac{1}{4}$  in. Ivory, Horn or Stag handle, \$0.70.

Fig. 1734 is a heavy Jack-knife; length,  $3\frac{1}{4}$  in. Ivory, Horn or Stag handle, \$0.85.

Fig. 1736 is a Swedish knife. This is quite a favorite among mechanics generally, as the blade is permanently held in the handle, and can be removed, folded into its frame and replaced in the handle, making it safe for use and carriage. No. 0, \$1.50; length,  $4\frac{1}{4}$  inches; length of

blade,  $4\frac{1}{4}$  inches. No. 1, \$1.15; length,  $3\frac{1}{4}$  inches; length of blade,  $3\frac{1}{4}$  inches. No. 2, \$1.00; length,  $3\frac{1}{4}$  inches; length of blade,  $2\frac{1}{4}$  inches. No. 3, \$0.85; length,  $2\frac{1}{4}$  in.; length of blade,  $2\frac{1}{4}$  inches.

### A FEW WORDS ABOUT RAZORS.

There is so much silly twaddle printed and said by makers of—and dealers in—Razors, and by barbers (who ought to know the most, and really, as a rule, know the least) about Razors and shaving, that we are impelled to present a few points gathered in an experience of a quarter of a century in their sale and use.

To the youth just entering manhood, shaving may be a pleasure. Before many years, however, it is more or less of a burden, and in many cases it becomes a dreaded duty.

Occasionally we hear a man bragging about the quality of a Razor, which he or some one else has bought at an auction sale for perhaps forty or fifty cents. There is really nothing surprising about this, as there is no difference in quality of steel between a 50-cent and a \$1.00 razor. However, we wouldn't care to take chances of getting a good razor in this way.

For average beards and faces, and by average, we mean at least sixty out of every hundred, the Razors made by Wade & Butcher, Jos. Rodgers & Sons, Geo. Wostenholm, and others of the better class of makers, are well suited. These Razors can be obtained from almost any dealer in hardware and cutlery, at prices ranging from \$0.75 to \$1.00.

We will mail to any address, a Razor of this class upon receipt of \$0.75 and 10 cents extra to cover cost of postage.



FIG. 1733 FULL CONCAVE RAZOR.

This style of Razor is sold to barbers and the better class of users. As regards quality of steel and temper, they are no better than any of the high grade plain Razors, but a Full Concave Razor is more desirable for the reason that they are much easier to sharpen and keep in order. The Full Concave Razors we sell are, we believe, as good as can be produced. They are finely ground, nicely finished, and superior in all respects. We have them in four widths,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$  inch. Price, each, \$1.50; by mail, 10 cents extra.

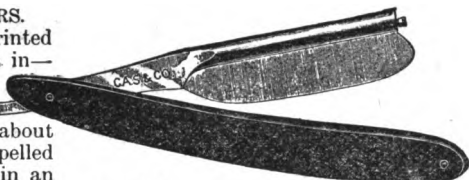


FIG. 1739. LE COULTRE (SWISS) RAZOR.

The writer has in past years, used upwards of thirty different razors, including all the best known English, German, French, and Swedish makes, and never knew what real comfort in shaving was until he began using the LeCoultre Razor.

Our attention was first directed to these Razors by a customer who had just returned from abroad, and who had bought a pair of them in Paris. He was so enthusiastic about them, that we ordered a few as samples and since then we have sold a good many—as Sterling Elliott says,—“Good many is ambiguous, but it saves lying.”

As a single instance of the popularity of these razors when once used, about three years ago we sold one of these razors to Mr. A. H. Munger, of the wholesale drygoods firm of Burnham, Hanna, Munger & Co., of Kansas City, Mo. In a few weeks Mr. Munger ordered four more, and up to the present time this first order has resulted in the sale of over three hundred of these razors.

The LeCoultre Razor is in shape quite similar to the ordinary razor, is nicely finished, but not especially handsome in appearance. The blades are removable, and are made of the finest steel, Exquisitely tempered.

We can furnish them with any number of blades, but the bulk of our sales consists of the razors with two blades, these being equal to two separate razors, as it takes but an instant to change.

Price of LeCoultre Razor, \$2.00; with 2 blades, \$3.00. Add for each extra blade, \$1.00. Postage, if sent by mail, 10 cents extra.

Star Safety Razor, \$1.50.

Square Razor Strop, \$1.25.

Swing Razor Strop, \$1.50.

Tension Razor Strop, \$2.00.

These Stropps are the very best quality in the different styles. Personally we prefer the Square Strop.

## OIL STONES.

Ask any mechanic who uses edge tools, what is the hardest thing to get, and if he stops to consider the matter a moment or two, he will reply, "A good Oil Stone." And if this same mechanic has an Oil Stone that is first-class, it is a most difficult matter to get him to part with it at any price, for the simple reason that he knows it will be a stroke of good luck for him to get another that is as good.

We have dealt quite extensively in Oil Stones for nearly thirty years, and have been during this time in a position to judge critically, the merits and demerits of all kinds of sharpening stones. Before presenting the merits of our Whelden Emery Oil Stone, we would like to say a little something about Oil Stones in general, taking for the first subject WASHITA OIL STONE, which is the most commonly used and best known of all. There are various grades of this stone, from perfectly crystalized and porous to vitreous flint and hard sand stone. The manufacturers—or rather the cutters—of this stone assort it usually in four grades. The first grade (which is the choicest selection) is usually given a fancy name, such as "Lily White," "Rosy Red," "Red Label," etc. The second grade is called "Extra Washita." The third "No. 1 Washita," and the fourth "No. 2 Washita." Of course the poorer grades predominate, and it is safe to estimate that eight-tenths of the Washita oil stones sold are of the third and fourth grades, and as only a limited percentage of the first grade are *absolutely* first-class, it is easy to understand why there are so many poor Washita oil stones, and so few good ones.

The next to be considered is the ARKANSAS OIL STONE, which for certain classes of work is without a peer. It is used more generally by engravers, surgeons, tool makers, and others who use very fine edge tools. Being very fine in grit, it cuts too slowly for the woodworkers' use, although very useful for putting on a fine, keen finishing edge.

The next to be considered is the TURKEY OIL STONE, which was in more general use before the introduction of the Washita. This stone is of

a grayish color, and of very smooth, even grit. It cuts somewhat faster than the Washita, and also leaves a better edge. The main trouble with Turkey oil stones is that they are rarely free from cracks and fissures, and are easily broken. If it were not for this fact, the Turkey stone would be much more popular.

The SOFT ARKANSAS OIL STONE might, perhaps, better be called Hard Washita, as it really par-takes more of the Washita than of the Arkansas nature. It cuts faster than the regular Arkansas, but not so fast as the Washita, leaves an edge not so fine as the Arkansas, but somewhat finer than the Washita; in price it is between the two.

Besides the foregoing, there is an endless number of other kinds of Oil Stones, among them the "Deerlick," "Seneca," "Niagara," "Chocolate," "Lake Superior," "Hindustan," etc., all of which are used as substitutes for the Washita. None of them are claimed to be any better than the Washita, and, in our judgment, none of them are equal to anything better than a *second quality* Washita.

So much for Oil Stones that are quite generally known, and we will now take up the subject of

## EMERY OIL STONES.

Emery Oil Stones are not a new thing; they have been made in various forms for twenty-five years back, but up to within a year or two they have never been held in any esteem, for the reason that they have never been of much account. The poorer makes have been utterly worthless, some of them being merely a composition of glue and emery, which would dissolve as soon as moisture of any kind was applied to the stone. The better ones were made with coarse emery, and were never considered as being useful for anything except for putting on a rough edge.

## THE WHELDEN EMERY OIL STONES

are made by the largest and most successful manufacturers of first-class emery wheels in the world. They are the result of years of careful experiment-

Tedium reading - but it may prove profitable

ing, and are now for the first time catalogued and described. During the past year we have placed in the hands of mechanics for careful trial, upwards of five thousand of these stones, and in not one single instance has the report been unfavorable.

As these stones are but little known, we present their qualities by comparing them with other Oil Stones that are well known, the first point being

**AS TO CUTTING QUALITY.**—The Whelden Emery Oil Stone is composed of the finest quality graded Turkish emery, and contains nothing but cutting substances. As will be seen by the illustration, there are two grades of emery; one medium coarse, the other fine. The coarse side is very fast cutting. As an example of this, in a recent experiment, a 2 inch plane iron which, as it comes from the maker, is about  $\frac{1}{4}$  of an inch thick at the edge, was sharpened to a fine cutting edge in three minutes. On a fast-cutting Washita stone it took seventeen minutes, and on an Arkansas stone thirty-six minutes, to get the same results.

The coarse side of the stone leaves a tool in about the same condition as a clear, free-cutting Washita stone would leave it, not quite sharp enough for fine work.

The fine side of the stone leaves a tool in about the same condition as a fine Turkey or soft Arkansas, much better than a Washita, but not as fine as a regular Arkansas.

**AS TO UNIFORMITY.**—This is a great feature with the Whelden Emery Oil Stone. It is next to impossible to get any natural stone—whether Arkansas, Washita, Turkey or Deerlick—that approaches uniformity of texture. There are hard spots, soft spots, cracks and fissures in almost every one.

The Whelden Emery Oil Stone is absolutely uniform, there being none of the above drawbacks. These stones are very strong, and can be dropped any reasonable distance without danger of breaking.

**AS TO SHAPES AND SIZES.**—We carry in stock sizes as given in following table. The most commonly used size is the No. 10, which is 8 in. long, 2 in. wide and 1 in. thick. We think, however, the chief reasons for this are, first,

that "grandpa" always used this size, and, second, because "grandpa" always used this size, the Oil Stone makers have never tried to introduce or carry in stock any other. In our judgment, the Nos. 12 and 15 are far better shaped, and when once a mechanic uses this style he does not care for the other. A stone with a narrow face is used up more uniformly, is kept free from hollows, therefore will sharpen a tool truer and also last longer.

No. 20 is a large Bench Stone, is quite desirable for larger tools, and is especially useful for grinding hair clippers of all kinds.



FIG. 3216. WHELDEN OIL STONE.

No.	Each.	Width Inches.	Thick Inches.	Length Inches.	Post. Cents.
2	\$0.22	1	$\frac{1}{2}$	3	4
4	.25	1 $\frac{1}{2}$	$\frac{1}{2}$	4	5
5	.35	2	$\frac{1}{2}$	4 $\frac{1}{2}$	12
6	.40	1 $\frac{1}{2}$	$\frac{1}{2}$	6	14
10	.60	2	1	8	25
12	.60	1 $\frac{1}{2}$	1 $\frac{1}{2}$	8	25
15	.85	1 $\frac{1}{2}$	2	8	35
20	1.00	3	1	10	50



FIG. 3217. OIL STONE IN CASE.

As these Stones are used with either water or kerosene (paraffin) an iron case is more desirable than a wooden one, as it does not soak up the moisture, and therefore keeps the stone in a dampened condition, which is preferable.

We furnish neat Iron Boxes suitable for Nos. 10, 12 and 20 Stones. Cases for the Nos. 10 and 12 Stones are \$0.25 each; for the No. 20, \$0.35.

We can, when desired, furnish wooden cases suitable for the Nos. 5 and 10 stones. These cases are handsomely finished and hinged so that either side of the stone may be used, by simply turning the case over. They are made in sycamore and black walnut.

Price of No. 5 Case, 18 cts., weight 4 oz.; No. 10 Case, 25 cts., weight 8 oz.



FIG. 3218. ROUND EDGE SLIPS.

All of these are 4 inches long, and are furnished in fine, medium or coarse grade, as desired. Unless otherwise specified, we send the fine grade, which is the most used.

No.	Each.	Width Inches.	Thick at Back.	Thick at Edge.
24	\$0.25	1½	$\frac{7}{8}$	$\frac{1}{2}$
26	.25	1½	$\frac{5}{8}$	$\frac{1}{4}$
28	.25	2½	$\frac{3}{4}$	$\frac{1}{2}$

Can furnish any desired size or shape to order (in quantities).

Postage—No. 24, 5 cts.; No. 26, 7 cts.; No. 28, 8 cts.



FIG. 3219. GOUGE SLIPS. \$0.25.

The length is 5½ inches; diameter at large end  $\frac{1}{2}$  inch, at small end  $\frac{1}{4}$  inch. Postage 5 cts.

These are somewhat oval in shape, well adapted for different sweeps of gouges.

### CAUTION.

As there are so many different kinds of Emery Oil Stones in the market, and many of them worthless, we urge users against buying anything that purports to be a first-class stone unless it bears the names "Whelden Oil Stone" and "Chas. A. Strelinger & Co."

## EMERY WHEELS *versus* GRIND-STONES.

Under the above heading the Leland & Faulconer Mfg. Co., prominent makers of grinding machinery, print the following as part of the results of a series of very careful tests made by them as to the comparative value of Grindstones and Emery Wheels:

### GRINDSTONES.

1st test—10 minutes run, cut  $\frac{1}{4}$  inch.

2d " —60 " " "  $\frac{1}{16}$  "

The stones used were soft and free-cutting, and the very best we could obtain.

### EMERY WHEELS.

1st test—10 minutes run, cut 1½ inches.

2d " —60 " " " 9½ "

The emery wheels used were regular stock wheels.

The material ground was in all cases Tool Steel. The pressure, speed, water supply and all other conditions precisely alike in all the tests.

It will be noticed that the Emery Wheel removed thirty-six times as much stock as the Grindstone, both running the same length of time, which shows a saving of  $\frac{1}{36}$  or 97 per cent in time; 97 out of a possible hundred is pretty good.

The Leland & Faulconer Mfg. Co., in concluding the article put this query, "Can you afford to grind your Tools on Grindstones?", and we, in concluding this article on Oil Stones, might also say, "Can you afford to Sharpen and Whet your Tools on anything but the **WHELDEN EMERY OIL STONE?**"

### SPECIAL SIZES.

We can, when desired, furnish to order, any size in these Emery stones, but only in quantities; can also furnish stones of coarser grit.

### COARSE OR FINE.

When desired we can furnish any of the sizes in table, composed wholly of either the coarse or fine emery; prices are the same.



## CONSERVATIVE ENGLAND.

Mr. Robert Kelly, Tool Maker and Cutler, and the largest dealer in Tools in Liverpool, England, had a dozen samples of these Emery Stones. These were sent him to be distributed among a few of the best mechanics, together with a request that their unbiased opinions be obtained. We have the following letter:

LIVERPOOL, Dec. 2d, 1896.

Messrs. CHAS. A. STRELINGER & CO.  
 Detroit, Mich., U. S. A.

Dear Sirs:—Respecting the Emery Oil Stones which we have distributed amongst reliable workmen, we may tell you that we have had three written reports and the remainder verbal. The written ones, which I enclose, speak for themselves, and the verbal reports ran in the same strain. I must now add my own testimony, and tell you that—after the most severe trials—they are the *best thing ever placed on a workman's bench*. I believe they are destined to take the place of the Washita and Turkey stones. As soon as you are ready to deliver, you can send us 300 of the No. 10 size.

Yours Resp'y,

ROBT. KELLY.

The following are extracts from the letters sent us:

"I find it combines two most essential qualities in one—that is—quick-cutting, and at the same time putting on a keen and clean-cutting edge, which qualities are impossible to be found in any other stone."

"It is the best I ever had, and is far superior to the Turkey or Washita stones. The stone is a perfect surprise to me."

ARKANSAS, WASHITA AND  
TURKEY OIL STONES.

These stones are termed "Oil Stones" for the reason, that oil must be used to float off the particles of steel cut from the tools, and thus prevent them from filling up the minute pores of the stone.

## WASHITA OIL STONE.

Washita Oil Stone is found in the spurs of the Ozark Mountains, of Ar-

kansas, near the Hot Springs. It was first put upon the market nearly fifty years ago, and was first named "Quachita" (since corrupted to Washita). It is composed of pure silica, and its sharpening qualities are due to the small, sharp pointed grains, or crystals, which are hexagonal in shape and harder than steel.

There are various grades of Washita rock. The best whet-stones are very porous and uniform in texture. The poor grades are less porous, making them vitreous, or "glassy," or they may have hard spots or sand holes.

## ARKANSAS OIL STONE.

Arkansas Oil Stone is the best sharpening stone known, for engravers, watch-makers, surgeons, and others who use very fine edge tools. It is expensive to manufacture, being nearly sixteen times as hard as common marble. A good Arkansas Stone will, with careful use, last a life-time.

## SOFT ARKANSAS OIL STONE.

This is a grade between the regular Arkansas and the Washita stone; is especially adapted for sharpening the tools of wood carvers, pattern makers and workers in hard wood; has been on the market only a few years, and has met with a constantly increasing sale.

## TURKEY OIL STONE.

This stone is a great favorite with many mechanics. It cuts a little faster than the Washita, and leaves a finer and better edge. It is not a very strong stone—this being its main defect. We have them in two sizes: No. 1, 6 in. long, 2 in. wide, and 1 in. thick, price, \$0.75; No. 2, 8 in. long, 2 in. wide and 1 in. thick, price, \$1.00.

## QUALITY.

We mean to send out nothing but the best and finest grades of Oil Stones. We pay the highest prices and all stones are selected.

## RED LABEL WASHITA STONES.

No.	Price.	Lgth. in.	Width, in.	Thickn's
1	\$0.80	8	2	1
2	.90	8	2	1½
3	1.00	8	2	1½
4	1.15	8	2	1½

### RED LABEL SOFT ARKANSAS OIL STONES.

These Stones are the same dimensions as the Washita. Prices: No. 1, \$2.00; No. 2, \$2.25; No. 3, \$2.50; No. 4, \$2.85.

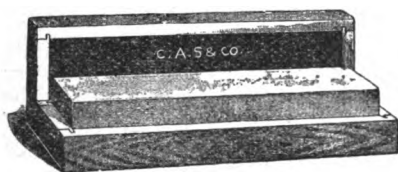


FIG. 3220. MOUNTED OIL STONES.  
(In Polished Cherry-wood Boxes.)

Size Stone.	Washita.	Arkansas.
3½ x 1	\$0.45	\$0.75
6 x 2	.75	2.25
8 x 2	1.00	3.00

### ARKANSAS OIL STONE.

Arkansas Oil Stone is very difficult to obtain in any regular sizes. They range in prices from \$1.50 to \$3.00 per pound, according to quality and size. If customers will inform us in regard to about the size wanted, we will name price and state nearest sizes we have in stock.

We recommend the Arkansas Stones mounted in cases (Fig. 3220). They are a very fine quality, and are less in price than the unmounted. This may seem somewhat singular, but the mounted stones are put up in this form on account of slight defects and roughness on the under side, but as there is enough wear in the stone to last almost a lifetime, this in most cases is not a serious objection.

### A SUGGESTION.

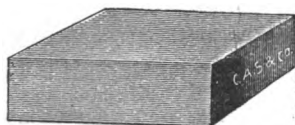


FIG. 3221.

Among these are Trimmer Knives, Paper and Leather Cutting Knives, and all knives that are used with a drawing cut. Besides this, for certain classes of work, Plane Irons, Chisels and other kinds of tools require this kind of an edge. The only oil stone that will give

Many tools require an exceedingly keen and smooth cutting edge.

the desired result is the Arkansas, but for general purposes it is too slow-cutting. For work of this kind we provide a special Arkansas stone, which we call an "Arkansas Hone." This stone measures about 2 x 2 in. and ½ to ¾ in. thick—a convenient size for the hand. It is used principally in connection with the Whelden emery stone. The emery stone puts on a fine, sharp edge, and the "Arkansas Hone" is used for finishing, which requires but a few strokes. Price, each, \$0.50.

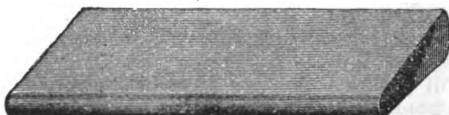


FIG. 3222. ROUND EDGE SLIPS.

The Round Edge Slips come in lengths from 3 to 5 in.; width, from 1½ to 2 in.; thickness on back, ¾ to 1 in.; thickness on edge, from ½ to ¾ in.

We class them in two sizes, heavy and light. For example, in the light Slips, the thickness at back would be from ¾ to 1; thickness at edge, ½ to ¾; in the heavy Slips, from 1 to 1½ at back, and ¾ to 1 in. at the edge.

Length.	WASHITA.		ARKANSAS.	
	Light.	Heavy.	Light.	Heavy.
3 in.,	\$0.15	\$0.20	\$0.60	\$0.75
4 "	.20	.25	.70	.90
5 "	.23	.30	.85	1.00

We also sell these by the pound, and will name prices upon application.



FIG. 3223. KNIFE BLADE SLIPS.

From 3 to 4 in. long, ½ to 1 in. wide, and ¾ to 1 in. on back. Arkansas, each, \$0.50; Washita, each, \$0.25.



FIG. 3224. PEN KNIFE PIECES.

Pen Knife Pieces from 2½ to 4 in. long, 1 to 1½ in wide, and ¾ to 1 in. thick.

Washita, from \$0.15 to \$0.25 each; Arkansas, from \$0.35 to \$0.65 each.



FIG. 3225. GOUGE SLIPS.

These are oval in shape, about  $\frac{1}{2}$  in. on large end, tapering to  $\frac{1}{8}$  in. at small end. Washita, each, \$0.45; Arkansas, each, \$1.00.

## SPECIAL SHAPES.

We carry in stock Triangular, Square and Pencil Point Slips in both Arkansas and Washita in size from  $\frac{1}{8}$  to  $\frac{1}{2}$  in. Washita, \$0.25; Arkansas, \$0.50—other shapes and styles to order.



FIG. 3226.

## ARKANSAS CARVING TOOL SLIPS.

These are about  $2\frac{1}{2}$  in. long. Price, per set of 4, \$1.00; each, \$0.30; postage, 5 cts.

## RAZOR HONES.

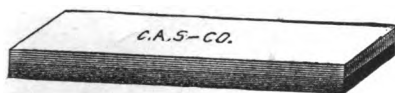


FIG. 3227. RAZOR HONE.

There is a great difference in prices of Razor Hones, also in quality; they are rated as Common, Quarter Fine, Half Fine, Fine, Extra Fine, Extra Choice, and Extra Choice *Selected*.

Price of an 8 in. Common quality is \$0.25; Extra Choice *Selected*, \$2.25. We carry in stock but two grades, Fine and Extra Choice *Selected*. Prices are as follows:

Fine, 6 in., \$0.45; 7 in., \$0.60; 8 in., \$1.20. Extra Choice *Selected*, 6 in., \$0.75; 7 in., \$1.25; 8 in., \$2.25.

## HEAVY EDGE TOOLS.

In the line of Heavy Edge Tools, comprising Hatchets, Hand Axes, Broad Axes, Adzes, etc., we carry the William Beatty & Son brand. This brand has been well and favorably known for nearly one hundred years, and we be-

lieve there are but few goods of this class that will equal them.

Since the beginning of the present Steel Era, or the "Age of Steel", as it is commonly known, a great many tool manufacturers have brought out lines of solid steel Hatchets and Hand Axes. Solid Steel sounds very fine, and is apt to lead a purchaser to expect that he is getting something extra good, but in our humble judgment, this is a mistake. In the earlier experiments the attempt was made to manufacture these tools of solid tool steel. This was found impracticable, as for some reason or other tools made in this way were weak in the center or eye portion, and so it was, we believe, discarded. The present method is to use soft or mild steel for the center, and tool steel for the cutting edge and head. Tool steel and soft steel haven't much of an affinity for each other, and do not take kindly to welding.

The Beatty tools are made in the old fashioned way. The body and eye being made of best Norway iron, with tool steel head and edge. This manner of making costs more, as the Norway iron is two or three times as expensive as common soft steel.

Our Hatchets are nicely finished, being polished all over. This not only makes a finer looking tool, but insures getting tools that are free from flaws, which are brought out by polishing, but concealed by bronzing or painting.

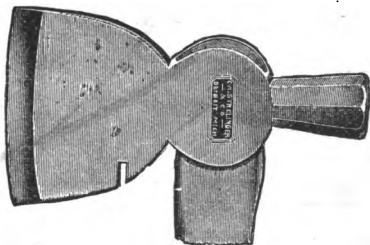


FIG. 3228. SHINGLING HATCHET.

The Nos. 00 and 0 are special sizes; No. 2 is the medium size, and we sell most of this size.

No. 00,	\$0.60.....	3 inch cut.
" 0,	.60.....	3½ " "
" 1,	.60.....	3½ " "
" 2,	.65.....	3½ " "
" 3,	.70.....	4 " "
" 4,	.75.....	4½ " "

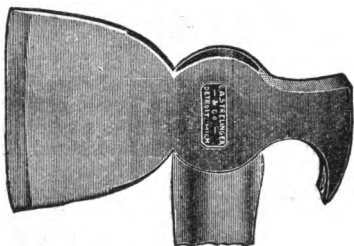


FIG. 3229. CLAW HATCHET.

No. 1,	\$0.70.....	3½	inch cut.
" 2,	.75.....	3½	" "
" 3,	.80.....	4	" "

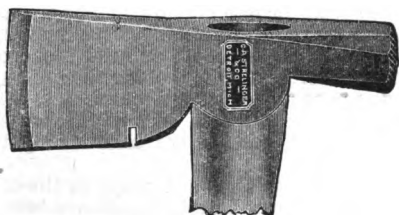


FIG. 3230. LATH HATCHET.

These Hatchets are a good shape; thinner bit than the older styles.

No. 1,	\$0.65.....	2	inch cut.
" 2,	.70.....	2½	" "
" 3,	.75.....	2½	" "



FIG. 3231. SQUARE HEAD. \$1.50.

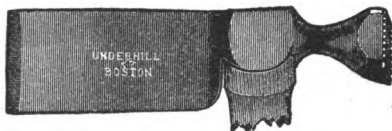


FIG. 3232. TURNED HEAD. \$1.75.

The above cuts represent the genuine Boston Star Lath Hatchet. It is the only make and style of Hatchet that a professional lather will use. Lathers claim that they can do as much work in one day with one of these hatchets as in two with the ordinary style. There are many imitations, but the genuine are stamped with the Star and name as shown in cut.

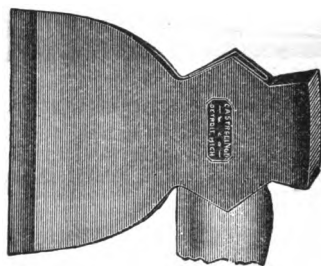


FIG. 3233.

## HAND AXE OR BROAD HATCHET.

These are handsomely finished, full polished. We carry them in stock with single bevel; can furnish to order with double bevel. The commonly used sizes are Nos. 4, 5 and 6.

No. 2,	\$0.90.....	4½	inch cut.
" 3,	1.00.....	5	" "
" 4,	1.10.....	5½	" "
" 5,	1.25.....	6	" "
" 6,	1.40.....	6½	" "
" 7,	1.60.....	7	" "



FIG. 3234.

## BROAD AXE, WESTERN PATTERN.

We carry these in weights 6, 7, 8 and 9 lbs. 6 and 7 lbs., \$2.00 each; 8 and 9 lbs., \$2.25 each.

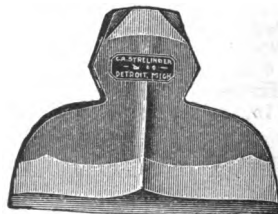


FIG. 3235.

## BROAD AXE, CANADA PATTERN.

We carry these in weights 6 to 11 lbs. 6 and 7 lbs., \$2.25; 8 and 9 lbs., \$2.50; 10 and 11 lbs., \$2.75.

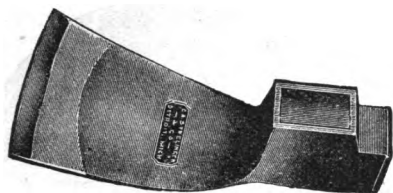


FIG. 3236.

CARPENTER'S ADZE, HALF HEAD.

Width of bit, from  $3\frac{1}{2}$  to  $4\frac{1}{2}$  in. Price, each, \$1.40.

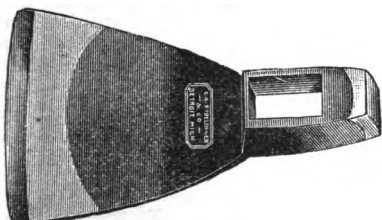


FIG. 3237.

RAILROAD ADZE, FULL HEAD.

Width of bit, from  $4\frac{1}{2}$  to  $5\frac{1}{2}$  in. Price, each, \$1.50.

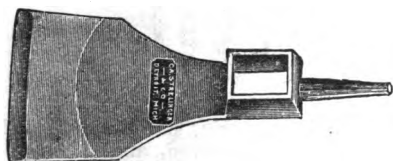


FIG. 3238. SHIP CARPENTER'S ADZE.

Width of cut,  $4\frac{1}{2}$  to  $4\frac{3}{4}$  in. Each, \$1.85.

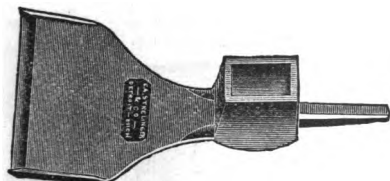


FIG. 3239.

SHIP CARPENTER'S ADZE, WITH LIPS.

Width of cut,  $4\frac{1}{2}$  to  $5\frac{1}{2}$  in. Each, \$2.15.

Gutter or Spout Adzes (not illustrated), width of cut,  $2\frac{1}{2}$  to  $3\frac{1}{2}$  in. Each, \$2.50.

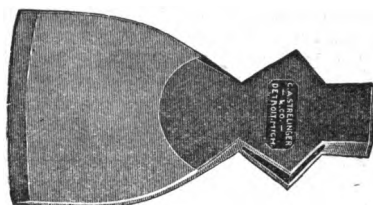


FIG. 3240. SHIP CARPENTER'S AXE.

Our Ship Axes are, we believe, the best Axes made. We have them in weights 5 to  $5\frac{1}{2}$  lbs.; width of cut  $6\frac{1}{2}$  to 6  $\frac{1}{2}$  in. Price, each, \$2.25.



FIG. 3241. SHIP CARPENTER'S MAUL.

Weight, from  $3\frac{1}{2}$  to 6 lbs. Per lb., \$0.25.

## HAMMERS AND MALLETS.

AS TO QUALITY—Believing as we do that a Nail Hammer is one of the most important of tools, we handle no cheap, or even medium grade, hammers. We have sold the D. Maydole brand of hammers for nearly thirty years, and are disposed to give them the first place. We have also sold thousands of hammers of other makes, and are aware of the fact that there are lots of good hammers made outside of the Maydole factory, but we are firmly convinced that Maydole makes more *first-class* hammers to the dozen than any other maker on earth.

AS TO HANDLES—All Handles in these Hammers are made of first-class second growth hickory. In our judgment, nothing is equal to a good piece of hickory for a hammer handle. We have tried applewood, cocobola and rosewood, and, while all three of these woods look pretty, they don't amount to much for service.

AS TO WEIGHT.—The weights given are of Hammers without handles. The hammers themselves vary but little in weight; handles are apt to vary a little. The handles in the Nos. 0, 1,  $1\frac{1}{2}$  and 2, and the corresponding sizes in

the other styles, weigh about 7, 6, 5 and  $4\frac{1}{2}$  oz. respectively.

**AS TO POSTAGE.**—In ordering Hammers to be sent by mail, enough must be included to cover the weight of the handle and packing.

**AS TO SHAPE.**—The different Hammers are furnished in all of the most desirable shapes and styles; they are nearly all of the Adze Eye pattern, the style known as Joiner's pattern (see Fig. 3247) having gone almost entirely out of use.

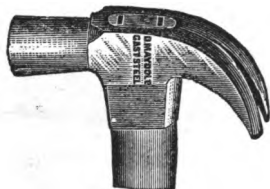


FIG. 3242.  
ADZE EYE, REGULAR STYLE.  
(Maydole.)

No.	0	1	$1\frac{1}{2}$
Each,	\$0.90	\$0.65	\$0.58
Wght, 1 lb. 10 oz.		1 lb. 4 oz.	1 lb.
No.	2	3	
Each,	\$0.57	\$0.55	
Wght,	13 oz.	$7\frac{1}{2}$ oz.	

The No. 0 is a new size, heavier than anything made heretofore.



FIG. 3243. ADZE EYE, BELL FACE.  
(Maydole.)

These Hammers have faces slightly rounding; are used quite extensively for finishing work, although we find many mechanics who prefer them for general use, and have noticed that when once a mechanic uses this style of hammer he rarely changes back to the others.

No.	11	$11\frac{1}{2}$	12	13
Each,	\$0.65	\$0.58	\$0.57	\$0.55
Wght, 1 lb. 3 oz.		1 lb.	12 oz.	7 oz.

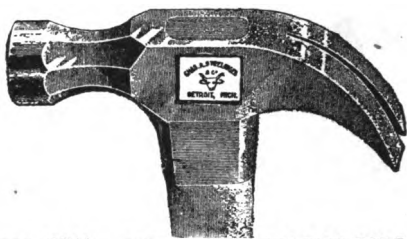


FIG. 3244. ADZE EYE, OCTAGON POLL.

This style of Hammer has become very popular within the past eight or ten years. The face is a trifle rounder than the Regular style, and not quite so round as the Bell Face style. These Hammers are made of fine tool steel, handsomely finished and nickel plated.

No.	20	21	22	23
Each,	\$0.75	\$0.70	\$0.68	\$0.65
Wght, 1 lb. 5 oz.		1 lb. 1 oz.	14 oz.	8 oz.



FIG. 3245.

ADZE EYE, NEWARK PATTERN.

This is a heavy, strong tool. The claws are less curved, and the face is somewhat of an octagon shape. This style of Hammer is very popular in the East. A splendid tool for general and heavy work.

No.	61B	$61\frac{1}{2}$ B
Each,	\$0.75	\$0.70
Weight,	1 lb. 4 oz.	1 lb.

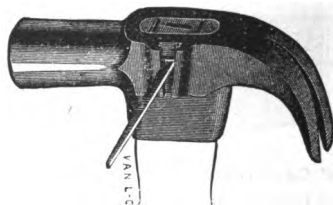


FIG. 3246. NAIL HOLDING HAMMER.

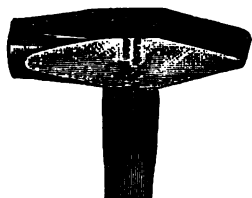
Made in one size, weight 1 lb. 3 oz. Price, \$0.85.



FIG. 3247. BRAD HAMMER.

A very light, convenient little tool for pattern and other delicate work.

No.	0	1
Each,	\$0.38	\$0.38
Weight,	2 oz.	4 oz.

FIG. 3248. RIVETING HAMMER.  
(Maydole.)

No. 40,	\$0.55;	Weight, 1½ lbs.
" 41,	.45;	" 1½ "
" 42,	.40;	" 13 oz.
" 43,	.35;	" 7 "
" 44,	.30;	" 4 "



FIG. 3249. TRIMMERS' HAMMER.

This Hammer is used quite extensively by carriage trimmers. In style it is quite like a farrier's hammer. One size, No. 253, weight 8 oz., price, \$0.60.



FIG. 3250. ADZE EYE BRICK HAMMER.

No.	442A	443A	444A
Each,	\$1.10	\$1.20	\$1.30
Wght,	1 lb. 8 oz.	2 lbs.	2 lbs. 8 oz.

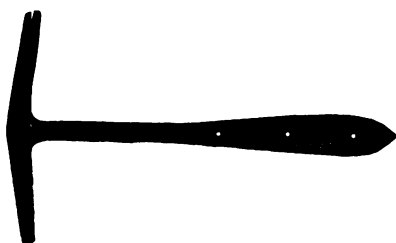
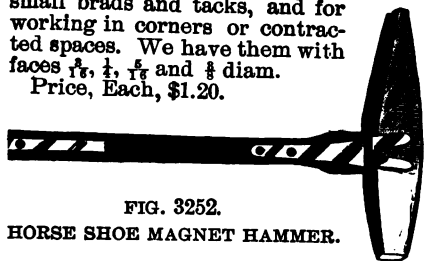


FIG. 3251. UPHOLSTERERS' HAMMER.

The above cut shows the most popular style of Upholsterer's Hammer. This Hammer is made of tool steel, with rosewood handle. Though intended principally for upholsterer's use, it is a very convenient tool for any one using small brads and tacks, and for working in corners or contracted spaces. We have them with faces  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $\frac{1}{2}$  diam.

Price, Each, \$1.20.

FIG. 3252.  
HORSE SHOE MAGNET HAMMER.

This Hammer is especially designed for Card Advertising work, but can be used for many purposes. It is made of fine tool steel, and is a strong, permanent magnet.

Weight of Hammer about 5 oz. Price with ordinary handle, \$1.50; with long handle, \$2.00; with jointed handle in two sections, \$2.75.

We carry in stock and can furnish a great variety of Hammers different from those shown here. In our Metal Workers' Tool catalogue will be found a complete line of Machinists' Hammers.

Besides these we can furnish Tinnerns', Pavers', Coopers', Geologists', Slaters', and Stone Cutters' Hammers, etc., etc.



FIG. 3253. CRATE OPENER.

This is a kind of a nondescript tool, but an extremely useful one. Is light but very strong; good for ripping things apart and hammering them together. One of the hammer faces is plain, the other milled; is drop-forged from solid cast steel.

Weight, 12 oz.; length, 9 in.; price, \$0.60.



FIG. 3254. CYCLOPS NAIL PULLER.

The Nail Puller is for many purposes an excellent tool, and the one shown here embraces, we believe, more good features than any other in the market. The handle forming part of the pressure foot saves the hand from cut or injury by the blow of the ram. It is very simple, having but four parts, the jaws being drop-forged from tool steel.

Price, \$1.40; length, 18 in.; weight, 4½ lbs.

### MALLETS.



FIG. 3255. STYLE OF HICKORY AND LIGNUM VITÆ MALLETS.

The Hickory Mallets are made of good, sound clean stock, and are very much superior to the hickory mallets commonly sold, although not of the choicest second growth hickory. Can furnish the latter to order only and in quantities.

Our Lignum Vitæ Mallets are made

from the finest quality wood, and are unusually fine.

On Mallets Nos. 1, 2 and 3 the handles are threaded and screwed in; on other sizes the handles are driven in. The No. 1 size weighs in Lignum Vitæ about 2 lbs. 8 oz.; the No. 2, 2 lbs.; the No. 5, 1 lb. The Hickory weigh about 25 per cent less.

No.	Size.	HICKORY.		LIGNUM VITÆ.	
		Each.	Doz.	Each.	Doz.
1	4x6	\$0.28	\$2.75	\$0.55	\$5.50
2	3½x5½	.20	2.00	.40	4.00
3	3x5	.18	1.60	.35	3.00
5	2½x4	.12	1.10	.25	2.50
7	2x3½	.10	.90	.20	2.00



FIG. 3256. RAWHIDE MALLETS.

For many purposes the Rawhide Mallets are superior. We carry quite a variety of sizes.

No.	Each.	Diam.	Length.	Weight.
2	\$0.35	1½	3	6 oz.
4	.50	2	3½	10 "
5	1.10	2½	4½	21 "
6	1.40	2½	4½	23 "



FIG. 3257. HIDE FACED HAMMER.

This is called Hide Faced Hammer to distinguish it from the Rawhide Mallets. For 90 per cent of the purposes to which a mallet is put, these Hammers will be found superior, and in our humble judgment one of them is worth a half dozen of the best ordinary mallets. They possess two great advantages; first, small bulk, and second, great durability. A pair of extra Faces



is furnished with each Hammer, and when worn out can be replaced at small cost.

No.	Each.	Per Pair. Faces	Lbs. Wght.	Face. Diam.
1	\$0.85	\$0.20	1	1½
2	1.05	.25	1½	1½
3	1.25	.30	2	1½
4	1.85	.40	4	2
5	2.60	.55	5½	2½



FIG. 3258. CARVERS' MALLETS.

These Mallets are made of choice Lignumvitæ and Hickory.

No.	Hickory.	Lignumvitæ.	Size.
1	\$0.23	\$0.35	2½x4
2	0.28	.40	3x4½
3	0.35	.45	3½x5

NOTE.—Can furnish Rubber Mallets, Rawhide Mauls, Copper and Babbit Metal Hammers, Stone Masons' Mallets, etc., etc. Most of these are described and priced in our Metal Workers' catalogue entitled "A Book of Tools" (see page 744 of this catalogue).

## HICKORY HANDLES.

In calling attention to our line of Hickory Handles, permit us to say, that we sell but one quality. The Handles illustrated and priced here—or rather the handles we send out—are all made from best quality *White, Selected, Second Growth Hickory*. The actual cost in the time of renewing a handle in a tool is usually more than the cost of a handle itself. Ninety per cent of the handles sold are of indifferent quality. Our Handles are uncommonly good, our prices on them uncommonly high, and we appeal only to that class of trade who are willing to pay a good price for good handles.

We can furnish to order any special style of Handles wanted, and know a little something about other kinds of handles; such as Rake, Hoe, Pitchfork, Shovel, etc., etc.

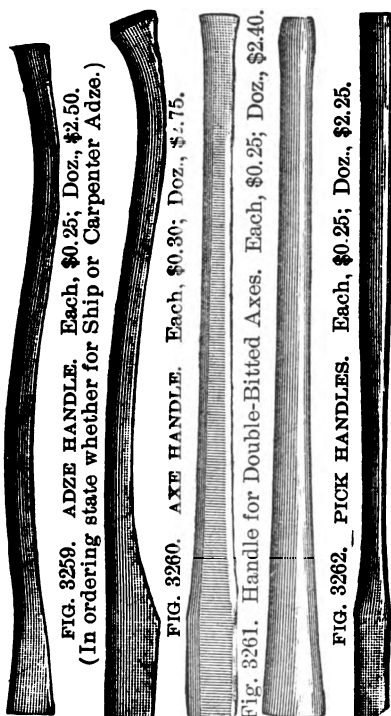


FIG. 3259. ADZE HANDLE. Each, \$0.25; Doz., \$2.50.  
(In ordering state whether for Ship or Carpenter Adze.)

FIG. 3260. AXE HANDLE. Each, \$0.30; Doz., \$2.75.

FIG. 3261. Handle for Double-Bitted Axes. Each, \$0.25; Doz., \$2.40.

FIG. 3262. PICK HANDLES. Each, \$0.25; Doz., \$2.25.

FIG. 3263. SLEDGE HANDLE.

*Try our Hickory Handles.*

SLEDGE HANDLE, Fig. 3263, is used for SLEDGES, MAULS, STRIKING HAMMERS, Etc.

30 inch, Each,	\$0.15;	Doz.,	\$1.35
32 " " "	.16;	" "	1.45
36 " " "	.18;	" "	1.75

FIG. 3264. HAMMER HANDLE.

For Machinists' Hammers—Small, 10 to 12 in., Each, \$0.07; Doz., \$0.60: Regular, 14 to 18 in., Each, \$0.08; Doz., \$0.80: Carpenters', Each, \$0.08; Doz., \$0.80.

FIG. 3265. HATCHET HANDLE.

Hatchet Handles, Each, \$0.08; Doz., \$0.80. Hand or Bench Axe Handles, Each, \$0.10; Doz., \$1.00.

## HANDLES.

**AS TO WOODS**—As a wood for chisel handles Hickory easily leads all other woods. Of course, there is hickory and hickory, but sound, well-seasoned, second growth, white hickory cannot be excelled. After hickory, the most commonly used is Applewood, which makes a nice looking and quite durable handle, but is not suitable for heavy work. Dogwood, which is similar in general appearance to applewood, is well thought of by many users. The close-grained English beech makes a durable handle, but our American beech is not very well suited for handles. Cherry does very well for carving tool, small file, and similar handles where they are not hammered upon. In the fancy woods Rosewood has always been the leader; it is a handsome wood, strong and durable as well. Cocobola, which is very much like rosewood, only of a lighter reddish color, has come into very extensive use during the past few years, on account of the scarcity of rosewood. Boxwood makes fine handles, but the best quality is very expensive and hard to get. The cheaper qualities warp and contain so many knots and imperfections, that these handles are but little sold. Mahogany is fairly good, but little used. Ebony is heavy, very expensive, and has also gone out of general use. Lignum Vitæ while good for many purposes, is not of much account as a handle wood.

**AS TO LEATHER HEAD HANDLES**—Handles with Leather Heads or Leather-tipped Handles, have been used by shoemakers and cobblers from time immemorial, but it was not until a few years ago that some genius lighted on the fact, that what was good for a cobbler might be good for a carpenter. When these Handles were first brought out, they were made in small quantities, and the prices charged were so high that comparatively few of them were sold. We are pleased to say that we can now furnish these Handles, made of Second Growth Hickory, at prices that are but a trifle higher than the ordinary style of Handle (made of equally good materials). There is no question but that for any kind of a tool that is hammered upon, the Leather Head

Handle is far preferable to any other. One Handle will outlast two or three of the best quality wood handles, or a dozen of such handles as are commonly sold. Perhaps the greatest point of advantage lies in the fact that these Handles can be used with a hammer, while with the ordinary style a mallet must be used. This in many cases saves carrying a mallet, which is rather a bulky tool to dispose of.

**TO SUM UP**—For any chisel or gouge that is used in heavy work the Leather Tipped Handle is the best; for paring chisels and gouges, the No. 13 Applewood Handle is right, unless something fancy is wanted, in which case the Rosewood Handles, Nos. 7 and 14, or Octagon Handles, Nos. 17 and 19, would be the thing.

### SOCKET FIRMER CHISEL HANDLES.

No. 3, Hickory, each, \$0.03; doz., \$0.35.

No. 5, Leather Head, Hickory, each, \$0.06; doz., \$0.60.

No. 7, Rosewood, each, \$0.12; doz., \$1.25.

### SOCKET FRAMING CHISEL HANDLES.

No. 9, Hickory, malleable iron ferrules, each, \$0.05; doz., \$0.50.

No. 11, Leather Head, Hickory, each, \$0.08; doz., \$0.80.

### TANGED CHISEL HANDLES.

No. 13, Applewood, extra fine, as regards both wood and finish, heavy cast brass ferrules, each, \$0.06; doz., \$0.65. We have extra large sizes in this style of Handle, each, \$0.10; doz., \$1.00.

No. 14, Rosewood, same as No. 13, each, \$0.15; doz., \$1.50.

No. 15, Leather Head, Hickory, heavy cast brass ferrules, each, \$0.08; doz., \$0.85.

### OCTAGON TANGED CHISEL HANDLES.

When a mechanic has a fine set of chisels he sometimes wants something extra nice in the way of Handles for them. The Octagon Handle is the old English style, tapering nicely from butt to point. These Handles come in sets of 12 (six sizes suitable for chisels from  $\frac{1}{2}$  to 2 in). We do not break sets.

(Continued on next page.)



FIG. 3266. HANDLES AND WOOD TURNINGS.

No. 17, Hickory, heavy brass ferrules, per set, \$1.65.

No. 19, Rosewood, heavy brass ferrules, per set, \$2.50.

#### CARVING TOOL HANDLES.

No. 21, Cherry, brass ferrules, each, \$0.04; doz., \$0.35. The most commonly used and sold.

No. 23, Applewood, choice, heavy brass ferrules, each, \$0.06; doz., \$0.60.

No. 25, Rosewood, brass tube ferrules, each, \$0.10; doz., \$1.00.

#### FILE HANDLES.

No. 29, Softwood, brass ferrules, each, \$0.03; doz., \$0.20; gross, \$2.00.

No. 31, Hardwood, brass ferrules, each, \$0.03; doz., \$0.25; gross, \$2.40.

No. 33, Jewelers' File Handles, Cherry, each, \$0.04, doz., \$0.40.

No. 35, Jewelers' Handles, Rosewood, each, \$0.08, doz., \$0.80.

#### TURNING TOOL HANDLES.

No. 37, Beech, polished, 9 to 11 inches long, brass ferrules, each, \$0.10; doz., \$1.00.

#### BRAD AWL HANDLES.

No. 39, Cherry, brass ferrules, each, \$0.03; doz., \$0.35.

#### SCREW DRIVER HANDLES.

No. 41, Ebony Finish, N. P. brass ferrules, for drivers from 3 to 5 inch, \$0.06; 6 to 12 inch, \$0.09.

No. 43, Rosewood finish, Round, N. P. steel ferrule, from 3 to 5 inch, \$0.07; 6 to 12 inch, \$0.10.

No. 45, Solid Rosewood, Octagon, same as on Piano Screw Driver. For drivers from 2 to 5 inch, \$0.12; 6 to 12 inch, \$0.15.

No. 47, Solid Rosewood, heavy, Octagon, same as on Giant Screw Driver. For drivers from 3 to 5 inch, \$0.15; 6 to 8 inch, \$0.25; 10 to 12 inch, \$0.30; 16 to 24 inch, \$0.35.

#### WOOD TURNINGS.

On this page we illustrate a variety of small wood turnings, including Pins, Balls, Knobs, Handles, etc. We can furnish any style in almost all kinds of wood. None of these are carried in stock; they are made by automatic machinery to order only, and cannot be furnished in small quantities. Prices will be made upon application. With sample or exact drawing of what is wanted, state quantity and of what wood they should be made.

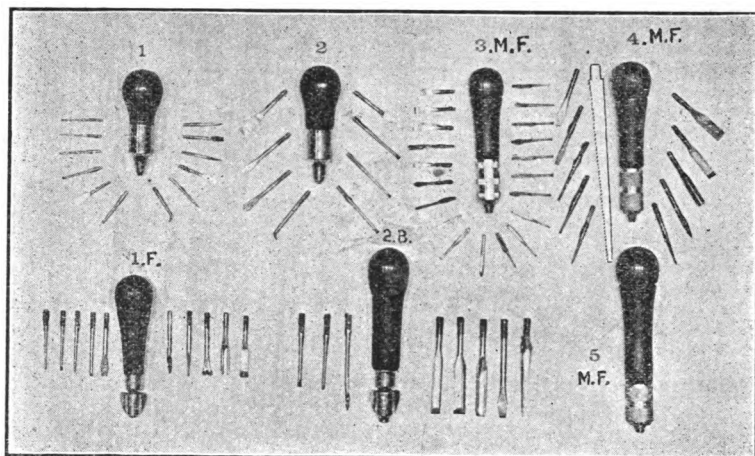


FIG. 3267. TOOL HOLDERS AND TOOLS.

## TOOL HOLDERS AND TOOLS.

In the cut (Fig. 3267) are shown the different styles of Tool Holders we carry in stock, this line being selected after examination and tests of forty-four different styles and sizes. As this book is essentially a catalogue of tools for *mechanics*, we have given first place to the styles that are best adapted for mechanics' use.

The Britton Improved Tool Holder is, in our judgment, altogether the best tool of this class; it is light, but strong, and can if the occasion requires, be hammered upon without danger of injury. Is of the best possible shape to fit the hand, and the tools that go with it are of fine quality. There are a number of imitations of this tool, but the genuine have the name "Britton" stamped on them. The handle is of rosewood, and the cap of brass, nickel plated.

No. 0, \$0.70, 12 tools, Awls only.

No. 1, \$0.70, 12 tools (as shown in cut).

Length of Nos. 0 and 1, 4½ in., weight 5 oz.; No. 2, 4½ in., weight 6 oz.

No. 2, \$0.90, 8 tools (large, as shown in illustration).

No. 3 M. F., \$1.00, has 20 small tools, handle of cocobola wood, steel parts nickel plated. The chuck on this handle is useful for holding all sorts of tanged tools. Length over all 6 inches, weight 7 oz.

The Sets of Tools and Handles which follow are intended more especially for general use, either in the shop, office or house. The makers of these different tools claim that they are of the finest quality. We do not entirely agree with the makers on this point, but they are good, and well adapted for the purposes for which they are intended.

No. 4 M. F., \$1.00, same style as No. 3, but with larger tools. Length over all, 6½ in.; weight, 9 oz.

No. 5 M. F., \$1.50, same style as No. 4, but with larger tools and holder. Length over all, 7½ in.; weight, 13 oz.

No. 1 F., \$0.75, cocobola handle, steel parts nickel plated. Length over all, 5½ in.; weight, 7 oz.

No. 4 F., \$0.45, same as No. 1 F., but of second quality. Wood not selected, tools not so good, nor so well finished.

No. 2 B., \$1.00, same general style and quality as No. 1 F., but with larger tools. Length over all, 7 in.; weight, 11 oz.

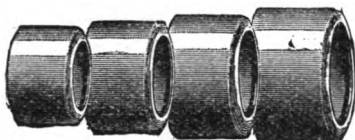


FIG. 3268. BRASS FERRULES.

These Ferrules are stamped from sheet brass.

No.	00	0	1	2	3	4
Diam.	1	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Gross,	\$1.56	\$1.30	\$1.10	\$0.88	\$0.75	\$0.70
Doz.	.18	.15	.12	.10	.09	.08
No.	5	6	7	8	9	10
Diam.	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$
Gross,	\$0.65	\$0.55	\$0.45	\$0.45	\$0.45	\$0.45
Doz.	.08	.07	.06	.06	.06	.06

## HEAVY BRASS FERRULES.

These are made of seamless brass tubing, and vary in thickness from  $\frac{1}{16}$  in the small sizes to  $\frac{1}{4}$  in the large sizes. Sizes given are outside diameter.

Size,	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Each,	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03	\$0.03
Doz.	.20	.20	.20	.20	.25	.25
Size,	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	1
Each,	\$0.03	\$0.04	\$0.05	\$0.05	\$0.06	\$0.06
Doz.	.30	.35	.40	.45	.55	.60



FIG. 3269. POCKET SCRATCH AWL.

This is a new tool and a very good one; well made, of good stock, nickel plated. Price, each, \$0.30; postage, 2c.



FIG. 3269a. PLAIN SCRATCH AWL.

Forged steel; price, each, \$0.15.

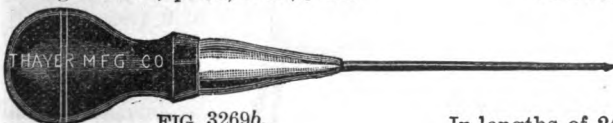


FIG. 3269b.

## SOCKET MARKING OR SCRATCH AWL.

These are of excellent quality, are forged of cast steel, and have ebonized handle. Price, each, \$0.20.



FIG. 3269c. BRAD AWL.

Since the advent of the Automatic Boring Tool and Combination Tool Holder, the regular style of Brad Awl has had somewhat of a black eye, some mechanics, however, prefer to use them. Our Brad Awls are the very best we can obtain; we have them in five sizes from fine to coarse. Fine and medium, per doz., \$0.25; each, \$0.03. Large, per doz., \$0.40; each, \$0.04.

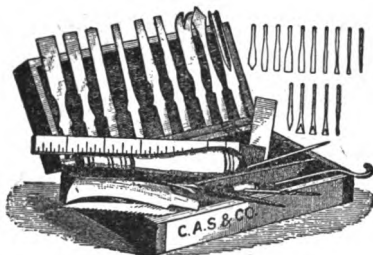


FIG. 3269d. NO. 1 FAMILY TOOL CHEST.

A very complete assortment of tools (20 in number), also patent adjustable holder with 12 Brad Awls, Chisels, etc. All contained in a nice walnut case, price \$3.00.



FIG. 3269e. TOOL RACK.

This Rack is suitable for hanging up Chisels, Files, Tools, etc., in factories, work shops, closets and tool chests.

In lengths of 24 in., nicely finished, being made of sheet steel, nickel plated.  
 No. 230, \$0.25 .....  $\frac{1}{2}$  clasp, 20 spaces.  
 No. 231, .30 .....  $\frac{1}{2}$  " 14 "  
 No. 232, .35 .....  $\frac{1}{2}$  " 10 "

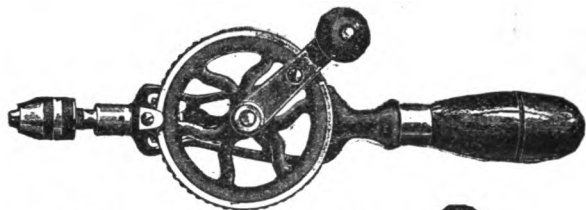
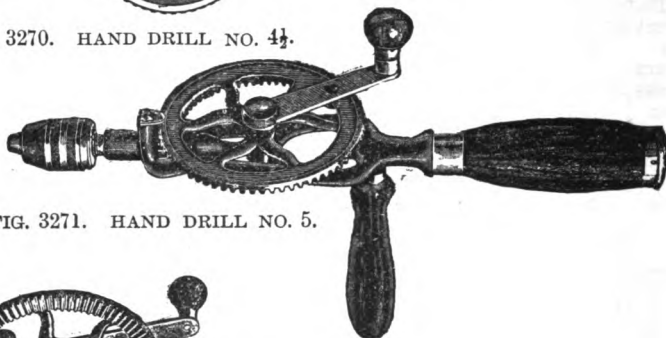
FIG. 3270. HAND DRILL NO. 4  $\frac{1}{2}$ .

FIG. 3271. HAND DRILL NO. 5.

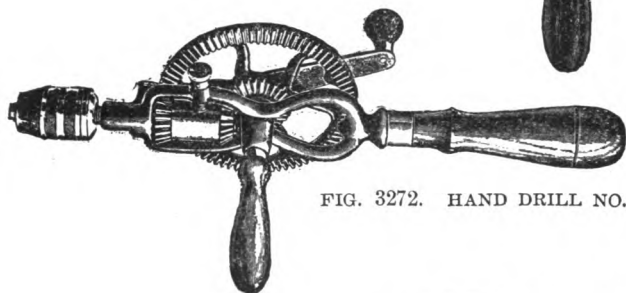
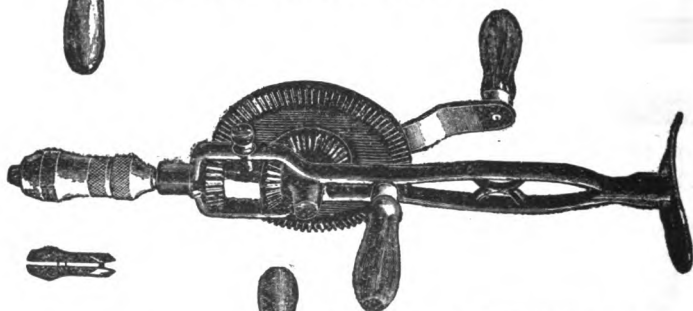
FIG. 3272. HAND DRILL NO. 5  $\frac{1}{2}$ .

FIG. 3273. BREAST DRILL NO. 7.

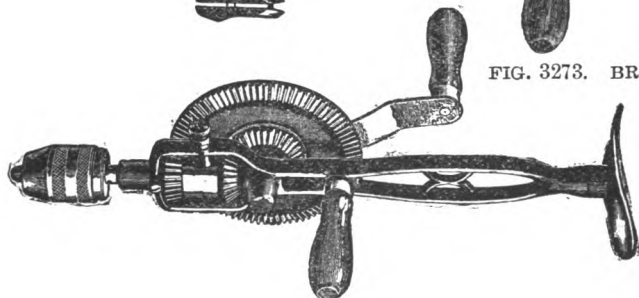


FIG. 3274. BREAST DRILL NO. 6.

## HAND AND BREAST DRILLS.

The line of Hand and Breast Drills shown here is a new one; is not only much more complete than any line heretofore shown, but the goods themselves are in design, finish, durability and convenience in handling superior to anything in the market. The Frames are of malleable iron, finely japanned; all polished parts are highly finished and nickel plated; the Gears have teeth cut out of the solid metal; the Chucks are of latest design, with three Jaws, knurled nut, and are accurate.

Fig. 3270, HAND DRILL NO. 4.—Holds sizes 0 to  $\frac{1}{4}$ ; 8 drill points (see Fig. 3278) furnished with each Drill. Price, \$1.25.

Fig. 3271, HAND DRILL NO. 5.—This Drill has capacity from 0 to  $\frac{1}{2}$  inch, and is correspondingly larger and stronger than the No. 4; furnished with 8 drill points (see Fig. 3278). Price, \$2.00.

Fig. 3272, HAND DRILL NO. 5 $\frac{1}{2}$ .—This Drill embraces features never before used upon tools of this character, and is certainly the finest Hand Drill ever produced. Has Double Gears, two Speeds; capacity is from 0 to  $\frac{1}{2}$  in. Price, \$2.50.

Fig. 3273, BREAST DRILL NO. 7.—The Nos. 6 and 7 Breast Drills take the places of the Nos. 10, 11, 12 and 13, shown in former catalogues. These tools will be found the most complete of any yet shown. The Frame is of malleable iron, the Gears have teeth cut from the solid, and have two speeds changed by simply turning a thumb nut. The Breast Plate is adjustable, the Chucks are accurately made, and altogether the tools are as near perfection as can well be attained. Two sets of Jaws go with the No. 7 Drill; one for holding Square, the other for Round Shanks. Price, \$2.75.

Fig. 3274, BREAST DRILL NO. 6.—This Drill is the same in every particular as the No. 7, excepting that it has a Three-jawed Chuck for holding round shank tools, capacity 0 to  $\frac{1}{2}$  in. Price, complete, \$3.00.

## AUTOMATIC BORING TOOLS.

These Tools are designed for boring wood for various purposes, such as for setting screws, brads, nails, etc. They can be used in many places where the brace, gimlet or brad awl cannot, and

are decidedly superior to the others for the purposes mentioned; 8 drills of graduated sizes accompany each tool. Any of these tools can be sent by mail complete for 10 cents postage.

There are three different makes of this style of tool; the oldest and best known is the Johnson, and this is the one we handle. Besides this there are the Millers Falls and Goodell. All these concerns make first-class tools. Prices are about the same, and there is really very little choice.



FIG. 3275. NO. 0, ALL METAL, \$1.10.

This style is perhaps the best known of any, and there are more of these used.



FIG. 3376. NO. 1, WOOD HANDLE, \$1.10.

The Wood Handle style is comparatively new, and is very well liked. The Handles are made of Rosewood, handsomely finished.

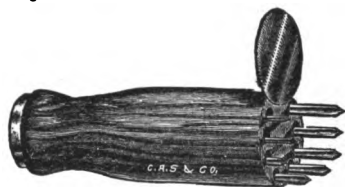


FIG. 3277. NO. 2 (Showing Handle).

No. 2, Wood Handle, \$1.45. The cut shows the No. 2 Handle. The No. 2 Tool is identical with No. 1, excepting that the handle is provided with separate cells for the tools, and a neat Spring Cover.

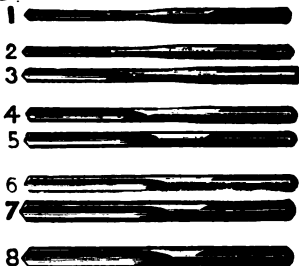


FIG. 3278. DRILL BITS.

Price, per Set (8), \$0.40; each \$0.06.

## BIT BRACES.

There are three distinct types of Chucks or Holders for Bit Braces, and in the Bit Braces shown here are embraced the latest improved form of these different types. The first is the Spofford Brace, the second the Fray, and the third the Barber.

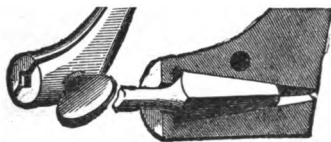


FIG. 3279. SPOFFORD STYLE.

This is a modification of the old Square Socket Brace. In the Square Socket Brace the shanks of bits had to be fitted to the socket. This Brace has a split socket which accommodates itself to different sizes of shanks. It is a very strong brace, and although the sale is less than formerly, there are a good many mechanics who favor this style. This Brace cannot be furnished in the Ratchet form, which has doubtless hindered the sale somewhat.

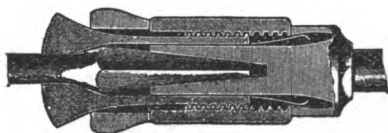


FIG. 3280. FRAY STYLE.

We call this the "Fray" because it represents the style of chuck made by the John S. Fray Co. We think the original Chuck of this type is the Rose & Johnson. The Peck Brace is quite like this, and we remember selling a brace somewhat similar nearly twenty-five years ago. The brace we refer to had two revolving collars or sleeves, but, at any rate, it has been out of the market for twenty years or more. The cut of Chuck shows the construction only fairly well, as it fails to show the socket at the strongest point. To do this we could not show the jaws (at least that is what the artist who makes our wood engravings tells us, and he ought to know). As shown, the channels in which the jaws slide are cut out from the barrel of the socket. However, we think the action will be generally un-

derstood. The bit falls into a socket, which is practically solid, while the jaws center and force the shank into the socket, holding it firmly.

In this type of Brace there are a number of different makes. The best known are the John S. Fray, Rose & Johnson, and Peck, Stow & Wilcox. We sell the first named, considering it as being superior.



FIG. 3281. BARBER STYLE.

Bit Braces with the Barber Style of chuck have been on the market about twenty-five years, and this style is the best known and most commonly used. The jaws and sleeve are so constructed as to conform to almost any style of bit shank. The best braces of this style are the No. G80 (Fig. 3282), the Millers Falls and the John S. Fray. The first named are made in but one grade, while the other two concerns make a large variety, some of them very low in price. The prices on all three mentioned above are nearly the same.



FIG. 3282. G80 RATCHET BRACE.  
(Barber Style.)

This Brace has Forged Steel Sweep and Jaws, Cocobola Handle, Lignum Vitae Ball Bearing Head, full polished and nickel plated. It is somewhat lighter than common, but on account of its compact construction, is as strong as any brace we know of. The Ratchet Attachment is superior. The Socket and Gear being in one piece, the centers on which the handle runs are Adjustable Steel Collars, which may be adjusted for wear. When not in use the Jaws are constantly in position to receive a bit, and will not fall together.

In this Brace there are no parts piv-



oted or secured together by pins, which can be cut off, bent, or broken by working it.

No.	10	11	12	13
Price,	\$1.95	\$1.80	\$1.67	\$1.55
Sweep,	14 in.	12 in.	10 in.	8 in.

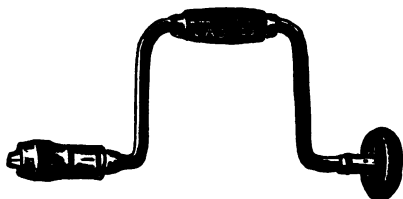


FIG. 3283. G85 PLAIN BRACE.

With exception of the Ratchet Attachment this Brace is identical with the G80. Is well made and handsomely finished.

No.	0	1	2	3
Price,	\$1.55	\$1.40	\$1.25	\$1.10
Sweep,	14 in.	12 in.	10 in.	8 in.

**SPECIAL NOTE.**—All the preceding matter relating to Braces was prepared before the Goodell-Hay Brace had been placed upon the market, which accounts for our not having referred to this Brace in the first portion of the reading matter.

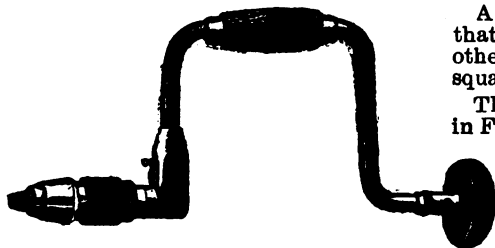


FIG. 3284.

#### GODDELL-HAY RATCHET BRACE.

This is an entirely new Brace, and marks a long advance in the Bit Brace line. It combines in a single tool the principal qualities of advantage that are found in nearly all other leading styles.

First, it has the Self-Centering feature of the Barber style of jaw. Second, it has the Solid Socket feature of the Fray, Rose & Johnson and Peck styles, only that the socket is stronger than any of these. The third and lead-

ing feature is the Quick-Action Chuck; the jaws are thrown open by turning the knurled sleeve about one-half way around, the sleeve slides out and the jaws are open ready to take any size bit. The jaws are closed by sliding the sleeve down and giving it one turn. This can be done instantly; a bit can be taken out and replaced with a different one inside of five seconds. For quality of materials and finish it equals anything we know of, has Forged Steel Sweep and Jaws, Adjustable Cocobola Handle, Lignum Vitae Head with Ball Bearings, is Full Polished and Nickel Plated.

No.	50	60	70	80
Price,	\$2.50	\$2.33	\$2.16	\$2.00
Sweep,	14 in.	12 in.	10 in.	8 in.

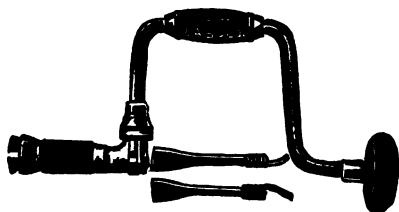


FIG. 3285. FRAY RATCHET BRACE.

A desirable feature in this Brace is that it will hold round shank drills or other tools from  $\frac{1}{4}$  to  $\frac{1}{2}$  in. as well as all square shanks.

The construction of Chuck is shown in Fig. 3280. The Crank, Sleeve, Jaws, Ratchets and Pawls are all of Steel; Heads and Handles, Cocobola; Ball Bearing Heads, all nickel plated and handsomely finished. A very fine Brace.

No.	66	86	106	126	146
Price,	\$1.25	\$1.35	\$1.45	\$1.55	\$1.85
Sweep,	6 in.	8 in.	10 in.	12 in.	14 in.

**AS TO SIZE.**—The most commonly used size of Brace for general purposes is the 10 Inch Sweep. We carry a great variety of sizes from the plain G85 with 8 in. sweep to the Spofford (Fig. 3286), with 17 in. sweep.

**TORN CATALOGUES.**—Do not cut or tear catalogue as this destroys it for future reference. Order by figure number.

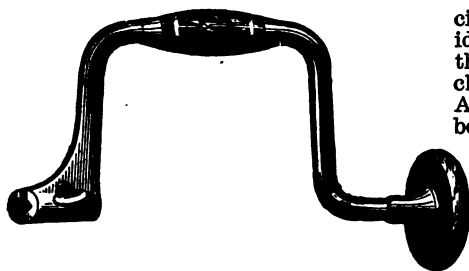


FIG. 3236. SPOFFORD BRACE.

This is one of the strongest of Braces, and is especially desirable for wagon makers. Nickel Plated, Cocobola Head and Handle. No. 117 is, we believe, the largest Bit Brace made.

No.	108	110	112	117
Price,	\$1.20	\$1.30	\$1.50	\$2.00
Sweep, 8 in.	10 in.	12 in.	17 in.	

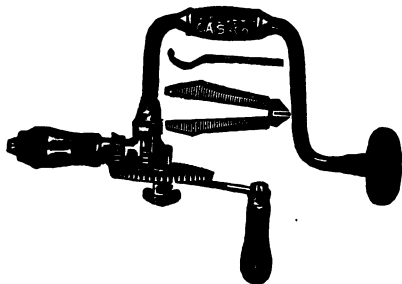


FIG. 3237. DRILL BRACE.

This consists of a first-class 10 Inch Sweep Ratchet Brace, with Ball Bearing Head, and with Cut Gear Wheels speeded about 3 to 1 for drilling. Besides the regular set of Jaws suitable for Auger Bits, there is an extra set for holding Round Shank Drills. The Gear is easily taken off, so that it can be used as an ordinary Brace. While not by any means equal in general usefulness to the two separate tools, it will be found desirable where space for storing is limited.

Price, complete, \$2.65.

#### PLAIN vs. RATCHET BRACES.

In the past few years there has been a marked tendency toward the use of Ratchet Braces for all kinds of work. The application of the Ratchet prin-

ciple to Bit Braces was a most excellent idea, and the largely increased sales of this form of Brace show that the mechanical public appreciate a good thing. Any one who uses a Ratchet Brace will be apt to know all about its useful and most excellent features. There are certain kinds of work and also certain situations where the Ratchet Brace can be used, and where the Plain Brace cannot.

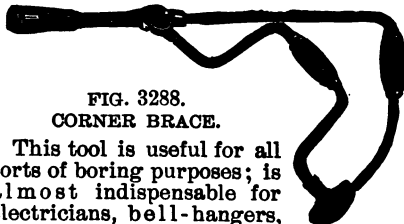
On the other hand, the Plain Brace possesses certain advantages, among which are the following:

First, it is considerably lighter. An 8 inch Plain Brace weighs 26 ounces, while the same size and style in the Ratchet Brace weighs 37 ounces (nearly 50 per cent heavier). In doing a great deal of boring this difference in weight would be felt. In using light bits especially, one can do considerably more work with the Plain Brace.

Second, it is stronger, more rigid and more durable. The extra joints necessary in forming the ratchet tend to weaken, and the extra wear occasioned by these joints and the Ratchet attachment is considerable. In our judgment, a Plain Brace will last 50 per cent longer than a Ratchet Brace.

Third, the Plain Brace is cheaper by from 20 to 35 per cent.

TO SUM UP—If the work to be done requires a Ratchet Brace, then a Ratchet Brace it must be, but if one does not need the Ratchet features, what in thunder is the use.

FIG. 3238.  
CORNER BRACE.

This tool is useful for all sorts of boring purposes; is almost indispensable for electricians, bell-hangers, steam-fitters, plumbers, etc., on account of its adaptability for boring in close quarters. We regret to say that these Braces, in workmanship and finish, are not all that could be desired, and in these respects they will not compare favorably with any of our high-grade braces. At the prices these are sold, they should be a high-grade tool throughout, but as they are a patented

article and have no competition, we presume they will not be made any better until the patent runs out (in 1901). Excuse our scolding, but we get a little out of patience with people who can make good goods, but don't because for certain reasons they think they "Don't have to."

These Braces are made in two sizes: No. 8, 8 Inch Sweep, \$2.40; No. 10, 10 Inch Sweep, \$2.75.

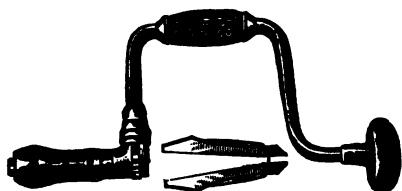


FIG. 3289. BAXTER RATCHET BRACE.  
(Barber Style.)

This Brace is made of the best quality of materials, has Lignum Vitae Head, Cherry Handle; is not nickel plated nor as handsomely finished as the others, but is a good, strong tool.

No. ....	83	103	123
Price.....	\$1.00	\$1.08	\$1.20
Sweep.....	8 in.	10 in.	12 in.

FIG. 3290.

WHIMBLE  
BRACE.

This is a strong, double crank Brace, used largely by ship carpenters and millwrights. We carry one size, 12 In. Sweep. Price, \$2.00.



FIG. 3291.  
ADJUSTABLE ANGULAR BIT STOCK.  
This tool is used in connection with any Bit Brace for boring at an angle.

As will be seen, this is adjustable and can be placed at different angles.

Price, \$1.50.



FIG. 3292.  
PLAIN ANGULAR BIT STOCK.

Is more rigid than the Adjustable, and preferred by some. Price, \$1.25.

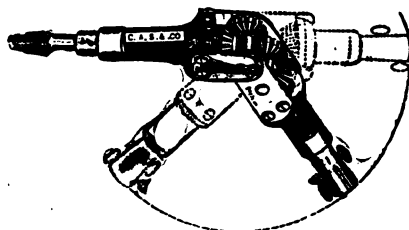


FIG. 3293.  
MEISTER'S ANGULAR BIT STOCK.

This is an entirely new style of Angular Bit stock; can be used at a greater variety of angles than any other. Is strong, well made and durable. Works equally well at all angles. The Gears are of Steel, with Cut Teeth. Length, 11 in.; weight, 20 oz.; price, \$2.50.



FIG. 3294. EXTENSION BIT HOLDER.  
Furnished in 16 or 20 inch lengths. Price, each, \$1.00.



FIG. 3295.  
CHUCK FOR SQUARE SHANK DRILLS.

This will be found useful for machines in which it is desired to use bits with square shank. These are fitted with  $\frac{1}{2}$  Inch Round Shank.

Price, each, \$1.65.

See boring Tools Page 624

## AUGERS AND BITS.

In taking up the matter of Augers and Bits, it will be understood that all articles of this class are included, such as Car Bits, Hand Augers, Boring Machine Augers, etc., etc. Taking up the matter from the beginning, the first item to be considered is

**AS TO QUALITY OF STEEL**—In many of the common, cheap bits the steel used is common open hearth stock, costing about 2½ cents per lb. The leading makers of first-class bits (except in two instances noted further on) use a special grade of American steel made for this purpose, which is presumably the best for the work intended. The two exceptions referred to are the D. M. & K. Arrow brand and the Job T. Pugh brand. These makers claim to use nothing but the best English cast steel. They certainly make very good bits, but as to whether the English cast steel is any better for this purpose than the special American steel, is a question.

**AS TO TEMPER**—Some of the cheap makes of Bits are not tempered at all; others are tempered by the handful. All first-class bits are tempered singly, just as any other edge tool is—or should be—and we sell no bits but that are tempered in this way.

**FORGED BITS**—Nearly all makes of Auger Bits are twisted; the exceptions are the Ford, Lewis and Irwin bits. It is claimed that a forged bit is much stronger than a twisted one.

Leaving now these points, we take up the question of the practical working qualities of different styles of Bits, considering first the question

**AS TO EASE IN BORING**—For shallow boring in clean, dry woods there is nothing that excels the Russell Jennings' style of bit. The Ford bit, which has the same style of lip, is equally good for this class of work. For hard and green woods the double lip style (Fig. 3298) if well made and tempered, answers very well. For deep boring in soft, hard or green woods nothing, in our judgment, equals the Ford bit.

**AS TO CLEARANCE**—In shallow holes almost any ordinary style of Bit will clear itself. For deep boring the

Ford bit is superior. The twist is so constructed as to carry the chip to the center and back without coming in contact with side of hole, thus preventing friction with the chip and wood, and giving perfect clearance.

**AS TO SMOOTH BORING**—The Forstner bit, Fig. 3324 (which is not an auger bit), will bore a smoother, cleaner hole than any other bit made. For smoothness of boring, next to this come any of the better class of bits with the Jennings' style of lip and spur.

**AS TO STRENGTH**—The Irwin bit is doubtless the strongest and stiffest auger bit made, after this in point of strength comes the Ford bit, which we believe excels the Irwin in all other points save this. Then the Ship Auger style. For general use any of the better qualities are strong enough.

**AS TO STRAIGHT BORING**—The only style of bit that will bore an absolutely straight hole is one having no screw point to follow the grain, or seams in the wood. This style is represented by the No-Screw Ship Auger, Fig. 3305. In screw point bits the nearest to this are the Ford and Lewis bits. In these bits the single cut is protected by a solid heel that serves as a guide, thus securing a practically straight hole.

**AS TO BORING IN END WOOD**—Boring in end wood is rather mean work at the best. For light work the Forstner Bit is good. For all sorts of work the Ford Bit is better than any other we know of. For machine work the Drill Head Machine Bit (Fig. 3347) is all right.

**ANGLES AND REBORING**—There are three styles of bits that can be used for boring at angles; the Cook, Forstner and the Gas Fitter's Auger. For medium and light work the Forstner is the best. The Gas Fitter's Auger is intended for rough work. For Rebor-ing, that is, enlarging a hole that is already bored, the Forstner or Cook Bit may be used.

**AS TO SPEED**—The fastest boring tools are the Trenail Auger and the No-Screw Ship Bit. The first named is but little used. The No-Screw Ship

Auger or Bit can be made to cut fast or slow as desired, by changing the angle of the cutting edge. In hard wood this bit will bore a smooth hole, but it is not suitable for soft wood. The Russell Jennings and the Ford bits are as speedy as any of the regular types of bit.

**AS TO DURABILITY**—The most durable and the longest lived style of bit is the Ship Auger, either no screw or with screw. After this comes the double lipped style (Fig. 3298). If the front spurs are broken off, this leaves the side lips and the bit can still be used.

**TO SUM UP**—A great deal is expected of Boring Bits. To-day the material worked upon may be clear white pine, butternut, white wood, or some other kind that is easy and nice to bore. To-morrow—white or red oak, birch, cherry, walnut, or some other kind that is not so easy or so nice. The next day—green oak, hemlock, bass wood, cedar, soft, spongy mahogany, or some other kind that is not at all easy or nice.

In order to have Bits that were absolutely the best suited to all the varying requirements of different kinds of work, the mechanic would find it necessary to carry a tool chest full of bits alone. This would not be expedient, and the expense, we fear, would be somewhat burdensome. What a nice thing it would be if some one could only invent or design a bit that would bore as easily as the Jennings or the Ford, as smooth as the Forstner, as straight as the No-Screw Ship Auger or Drill Head, as fast as the Trenail, bore at an angle like the Cook, Forstner, or Gas Fitter's auger, clear itself in all kinds of wood like the Ford, and that was as strong and stiff as the No-Screw Ship Auger or Ford.

That's ideal, but impossible, and the next best thing for a mechanic is to have the style of bit that comes as near covering all of these requirements as is possible for him to obtain. We think that perhaps the Ford Bit is the most useful all-around tool, but as all bits we sell are first-class, our customers would hardly make a mistake in ordering any kind shown, unless indeed, the work is special, in which case the choice must be made by the user with whatever help he may have obtained from experience—or what has been written here.

## DESCRIPTION AND STYLES.

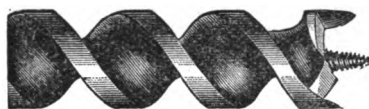


FIG. 3296. RUSSELL JENNINGS.

The Jennings' Auger Bit was patented by Russell Jennings in the year 1855. Every genuine Russell Jennings' Auger or Bit is stamped with the full name, "RUSSELL JENNINGS" on the shank. The excellent qualities of the Russell Jennings' Bit are too well known to need any comment. Nearly all manufacturers of Augers and Bits make this pattern of bit. All of them, we believe, claim to make just as good Bits as those made by the Russell Jennings Co., but, in our judgment, such is not the case, and we believe that the genuine Russell Jennings' Bit is superior to any other bit of this style. They are considerably higher in price than others, but there are plenty of mechanics who are willing to pay the difference.

We sell the Jennings' Pattern Bits, see Fig. 3297.



FIG. 3297. JENNINGS' PATTERN.

The Jennings' Pattern Bit is an imitation of the Russell Jennings'. Since the expiration of the Jennings' patents, nearly all manufacturers of Augers and Bits make Jennings' Pattern bits, so that there are at least fifteen makers, and we do not know of a single concern making these that does not claim to make just as good bits as the Russell Jennings'. We can best explain our position in regard to this matter by printing the following correspondence:

DOUGLAS, Ark., Sept. 19th.

CHAS. A. STRELINGER & Co.,

Detroit, Mich.

Dear Sirs:— \* \* \* \* Our hardware dealer asks \$5.60 for a set of Russell Jennings' bits. He has what he calls Jennings' pattern bits, which he offers at \$4.00 a set, and he claims they are made of the finest steel, tempered by a

special process, and that they are better than the Russell Jennings bits. I didn't know enough about it to dispute with him. Would like to know what you think. \* \* \* \*

Yours truly,

HENRY C. WHITCOMB.

DETROIT, Mich., Sept. 21st.

HENRY C. WHITCOMB,  
Douglas, Ark.

Dear Sir:—Replying to your favor of the 19th inst. Regarding that part of it which relates to Auger Bits would say, that there are a dozen different makers of Jennings' pattern bits. As you failed to state in your letter who the makers of this particular set were, we cannot pronounce upon the quality. We do not know of a single make of Jennings' Pattern bits that we are not thoroughly familiar with. There are at least a dozen different makers; some of them make very good goods, others fairly good, and some few of them make bits that any dealer should be fined for selling. The Jennings' Pattern bits we sell are made by one of the oldest and best known firms of Bit makers in this country. They guarantee them to us as being fully equal to the Russell Jennings, but notwithstanding their guarantee, we do not believe that they are quite as good. If we thought that they were, there would be no sense in our selling the Russell Jennings, for the price of the others is very much less. However, it is a grave question in our minds as to whether the Russell Jennings' bits are worth the difference—we mean as compared with at least two brands of the best quality Jennings' Pattern bits. We list the genuine Russell Jennings' bits at \$5.00 per set, and our Jennings' Pattern, which we believe to be the best bit of this style—outside of the genuine Russell Jennings—at \$3.15. The difference you will notice is about 65 per cent—that is—the Russell Jennings' cost about 65 per cent more than the others. If there was a difference of 10 or 15, or even 25 per cent, we would have no difficulty in advising our customers, but as it is, we must simply leave the buyer to decide for himself. \* \* \*

Respectfully,

CHAS. A. STRELINGER & CO.



FIG. 3298. DOUBLE SPUR.

This old and well-known style of Auger Bit has a great many friends. It would have a great many more if the various manufacturers of this form of bit had kept up the quality, instead of trying to find out how cheap a bit they could make. For some purposes it is a very desirable style. If either one (or both) of the front cutting lips is broken off, it can still be used to good advantage.

The Job T. Pugh brand and the "Arrow" brand (made by Dewitt, Morrison & Kelly) are doubtless the finest bits of this style that are produced; it is claimed that these two brands are made entirely by hand of the finest English steel. The objection we have to either is the price, which is about \$7.00 per set of 13 ( $\frac{1}{4}$  to 1 inch) Auger Bits. In this style of bit we handle the Snell's brand. The Snell Bit has been well and favorably known for nearly one hundred years, and outside of the two above named we think it is altogether the best bit of this style in the market. While costing more than other bits of the same style, the prices are still very reasonable.



FIG. 3299. FORD.

The Ford Augers and Bits are comparatively new, having been on the market but two or three years. In this short time, however, they have grown into great favor. We say new, but really there is only one feature about these bits that is new—that is—the clearance, which is explained further on. Otherwise it is a combination of the best features of well known styles. The cutting lips are similar to the Russell Jennings' bit, this being considered generally as the best form of cutting bit. The form of twist is similar to the Lewis and Ship Auger Bits, this giving great strength. The steel is forged under a hammer instead of being twisted.

which also strengthens the bit. The form of head combined with the twist secures a tool that will bore straighter than the ordinary double twist. The peculiarly desirable feature about these tools is the ease with which they bore in deep and medium deep holes. The twist is so constructed as to carry the chip to the center and back, without coming in contact with side of hole, thus preventing friction with the chip and wood, and giving perfect clearance. In Fig. 3300 we present a sectional cut showing the working of this bit. The entire depth of a 12 inch twist car bit may be bored without removing the bit from the hole.

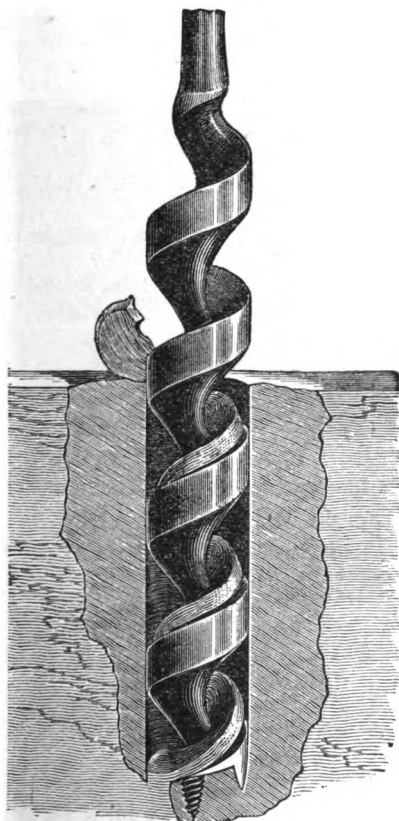


FIG. 3300.

SECTIONAL CUT OF FORD BIT.



FIG. 3301. COOK'S OR CIRCULAR LIP.

The Cook Bit has always been a prime favorite with many mechanics. For boring at an angle, boring end wood, and enlarging holes already bored, it is especially useful. It is also a desirable bit for all around work. The best bit of this type is made by James Swan, successor to the original manufacturers (Douglas Mfg. Co.) In the sizes from  $\frac{1}{8}$  to  $\frac{1}{2}$  these bits are single twist, and the larger sizes double twist as shown in cut.

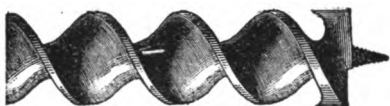


FIG. 3302. REGULAR OR SQUARE LIP.

The only styles of Boring Tools we carry in stock in this style are Nut or Hand Augers, and Boring Machine Augers.

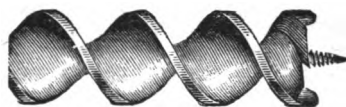


FIG. 3303. PERFECT.

The "Perfect" Augers are quite similar in style to the Russell Jennings. The spurs are made slightly concaved inside, which insures ease and rapidity in boring either in hard or soft wood. We carry this style only in the Hand or Nut Augers and Boring Machine Augers. For nice boring they are very much superior to the regular Nut or Boring Machine Auger, and the prices are quite moderate. They are well made and of the best material.

**TORN CATALOGUES**—Every article in this catalogue is very plainly described, either by figure number, regular number, or name; and we beg our customers not to cut or tear out pages, or parts of pages, as this mutilates the book, and when done to any extent, destroys it for reference.



FIG. 3304. SHIP AUGER WITH SCREW.

Ship Augers and Ship Auger Bits are intended for hard woods. They are very strong and durable, will bore a clean hole and cut very fast, the cut being made fine or very coarse, according to the angle at which the lip is filed. The Augers and Bits without Screw will bore straighter than any



FIG. 3305.

SHIP AUGER WITHOUT SCREW.

other style, on account of there being no screw point to follow the grain or seams in the wood. These Augers are also excellent for boring in end wood.

We carry in stock Augers, Nut Augers, Boring Machine Augers, Auger Bits and Car Bits of this pattern, and furnish Machine Bits to order.



FIG. 3306. AUGER BIT.

Length from  $7\frac{1}{2}$  to 10 in. (according to size).

## AUGER BITS.

We aim to carry in stock all sizes and styles of Auger Bits, as given in the following lists and tables. We can usually furnish any desired size on short notice.



FIG. 3307. NO. 2—FORD AUGER BIT.

(For description see Fig. 3299.)

It will be noticed that we carry in this style of bit a great many uncommon sizes, especially the sizes by 32nds of an inch from  $\frac{1}{4}$  to 1 inch. There are times when the requirements are very exacting, and a  $\frac{1}{4}$  inch bit may be too small, a  $\frac{3}{8}$  too large. In cases of this sort the  $\frac{1}{2}$  size is apt to be just the thing.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{4}$	\$0.19	$\frac{3}{16}$	\$0.38	$1\frac{1}{8}$	\$0.60
$\frac{5}{16}$	.22	$\frac{1}{2}$	.38	$1\frac{1}{4}$	.64
$\frac{3}{8}$	.24	$\frac{5}{8}$	.41	$1\frac{3}{8}$	.68
$\frac{7}{8}$	.28	$\frac{3}{4}$	.41	$1\frac{1}{2}$	.71
$\frac{1}{2}$	.24	$\frac{7}{8}$	.45	$1\frac{5}{8}$	.75
$\frac{3}{4}$	.28	$1$	.45	$1\frac{7}{8}$	.79
$\frac{7}{8}$	.28	$1\frac{1}{8}$	.49	$1\frac{7}{8}$	.83
$1$	.30	$1\frac{1}{4}$	.49	$1\frac{7}{8}$	.88
$1\frac{1}{8}$	.30	$1\frac{1}{2}$	.53	$1\frac{7}{8}$	.95
$1\frac{1}{4}$	.33	$1\frac{3}{4}$	.53	$1\frac{7}{8}$	1.00
$1\frac{3}{8}$	.33	$1\frac{3}{4}$	.57	$1\frac{7}{8}$	1.10
$1\frac{1}{2}$	.35	$1\frac{3}{4}$	.57	$1\frac{7}{8}$	1.17
$1\frac{3}{4}$	.35	$1\frac{3}{4}$	.60		

## IN SETS.

Set No. 102, \$4.18,  $\frac{1}{4}$  to 1 in. x 16ths (13 sizes).

Set No. 1002, \$5.10,  $\frac{1}{4}$  to  $\frac{1}{2}$  in. x 32nds,  $\frac{1}{4}$  to 1 in. x 16ths (17 sizes).

Set No. 1012, \$6.60,  $\frac{1}{4}$  to  $\frac{3}{4}$  x 32nds, and  $\frac{1}{4}$  to 1 in. x 16ths (21 sizes).

Set No. 1022, \$8.20,  $\frac{1}{4}$  to 1 in. x 32nds (25 sizes).

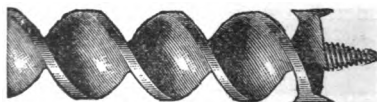


FIG. 3305.

NO. 10—DOUBLE SPUR AUGER BIT.

(For description see Fig. 3298.)

In this style of Auger Bit we sell only the Snell Bit, which is, we believe, the best in this class.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{4}$	\$0.18	$\frac{1}{4}$	\$0.21	$1\frac{1}{8}$	\$0.42
$\frac{1}{2}$	.15	$\frac{1}{2}$	.23	$1\frac{1}{4}$	.46
$\frac{3}{4}$	.16	$\frac{3}{4}$	.25	$1\frac{1}{2}$	.52
$\frac{7}{8}$	.17	$\frac{7}{8}$	.28	$1\frac{3}{4}$	.58
$1$	.17	$1$	.30	$1\frac{3}{4}$	.65
$1\frac{1}{8}$	.18	$1\frac{1}{8}$	.34		
$1\frac{1}{4}$	.20	$1\frac{1}{4}$	.37		

Set No. 110, \$2.75,  $\frac{1}{4}$  to 1 in. x 16ths (13 sizes).

Set No. 1010, \$1.65,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$  and 1 inch (8 sizes).



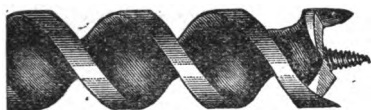


FIG. 3309.

## NO. 4—RUSSELL JENNINGS' AUGER BIT.

(For description see Fig. 3296.)

In buying Russell Jennings' Auger Bits remember that every *genuine* Russell Jennings' auger or bit is stamped with the full name, "Russell Jennings", on the shank.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{8}$	\$0.21	$\frac{1}{4}$	\$0.37	$\frac{1}{2}$	\$0.50
$\frac{3}{8}$	.25	$\frac{3}{8}$	.39	$\frac{3}{4}$	.56
$\frac{1}{2}$	.27	$\frac{1}{2}$	.44	$\frac{1}{2}$	.60
$\frac{3}{4}$	.31	$\frac{3}{4}$	.46	1	.64
1	.33				

IN SETS.

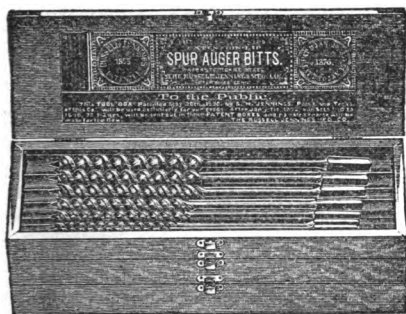


FIG. 3311.

## RUSSELL JENNINGS' BITS IN CASE.

This is the only style of bit that is furnished to us in cases, and the price of this set includes case. No deduction is made from the price if the case is not taken, and we have no extra cases of this style for sale (See Bit Boxes, Fig. 3318).

Set No. 104, \$5.00,  $\frac{1}{8}$  to 1 in. x 16ths (13 sizes).



NO. 40—DOWEL BIT.

This style of bit is used almost exclusively by coopers, but there are times when, on account of its extremely short length, it may be conveniently used for special purposes. We have three styles, short for brace, length over all about 3

in., long for brace, length over all  $4\frac{1}{2}$  in., and long for machine, length over all  $4\frac{1}{2}$  in. All are Russell Jennings' make.

Size.	Each.	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Each.	\$0.22	\$0.26	\$0.29	\$0.33	\$0.36

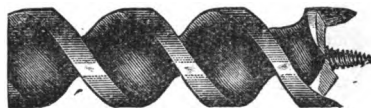


FIG. 3312.

## NO. 6—JENNINGS' PATTERN AUGER BIT.

(For description see Fig. 3297.)

There are a great many Jennings' Pattern Auger Bits sold that are claimed to be as good as the Russell Jennings. Our Jennings' Pattern Bits are of the best quality, finely finished. We warrant every bit fully, and will replace any found defective. Still we do not think they are quite equal to the genuine Russell Jennings.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{8}$	\$0.16	$\frac{1}{4}$	\$0.26	$1\frac{1}{8}$	\$0.44
$\frac{1}{4}$	.13	$\frac{3}{8}$	.28	$1\frac{1}{4}$	.48
$\frac{3}{8}$	.16	$\frac{1}{2}$	.30	$1\frac{3}{8}$	.52
$\frac{1}{2}$	.17	$\frac{3}{4}$	.32	$1\frac{1}{2}$	.60
$\frac{3}{4}$	.19	1	.35	$1\frac{3}{4}$	.68
1	.21	$1\frac{1}{8}$	.38	1 $\frac{7}{8}$	.78
$1\frac{1}{8}$	.24	1	.40		

Set No. 106, \$3.15,  $\frac{1}{8}$  to 1 in. x 16ths (13 sizes).

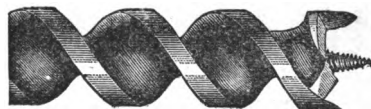


FIG. 3313.

## NO. 8—BLUE TWIST JENNINGS PATTERN

These Bits are the same as the foregoing, excepting that the twist is blue instead of polished. We sell them at about the same price as the regular Auger Bit, and consider them as being the best low-priced Jennings' Pattern Auger Bit in the market.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{8}$	\$0.16	$\frac{1}{4}$	\$0.20	$\frac{1}{2}$	\$0.30
$\frac{3}{8}$	.16	$\frac{3}{8}$	.21	$\frac{3}{4}$	.34
$\frac{1}{2}$	.17	$\frac{1}{2}$	.23	1	.37
$\frac{3}{4}$	.17	$\frac{3}{4}$	.25		
1	.18	1	.28		

Set No. 108, \$2.75,  $\frac{1}{8}$  to 1 in. x 16ths (13 sizes).

Set No. 1008, \$1.65,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1, and 1 inch (8 sizes).



FIG. 3314.

Style of Sizes  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{5}{8}$  and  $1$ .

FIG. 3315.

NO. 12—COOK'S AUGER BIT.

Style of Sizes  $\frac{1}{8}$  and larger.

(For description see Fig. 3301.)

The genuine and best Cook's Auger Bit is made by J. Swan, successor to the Douglas Mfg. Co.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{8}$	\$0.20	$\frac{1}{4}$	\$0.30	$\frac{3}{4}$	\$0.47
$\frac{1}{4}$	.20	$\frac{3}{8}$	.33	$1\frac{1}{8}$	.50
$\frac{3}{8}$	.21	$1\frac{1}{4}$	.36	$1\frac{1}{2}$	.54
$1\frac{1}{8}$	.23	$2$	.40	$1\frac{3}{4}$	.63
$1\frac{1}{4}$	.25	$2\frac{1}{2}$	.44	$2$	.72
$2$	.28				

Set No. 112, \$3.95,  $\frac{1}{8}$  to 1 in. x 16ths (13 sizes).



FIG. 3316.

NO. 14—SHIP AUGER BIT, NO SCREW.



FIG. 3317.

NO. 16—SHIP AUGER BIT, WITH SCREW.

(For description see Fig. 3304.)

These Bits are intended for hard woods only, are very strong and durable, and will stand more "grief" than any other style of bit.

The price of the Bits are the same, either with or without Screw.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{8}$	\$0.40	$\frac{1}{4}$	\$0.50	$\frac{3}{4}$	\$0.70
$\frac{1}{4}$	.40	$\frac{3}{8}$	.50	$1\frac{1}{8}$	.80
$\frac{3}{8}$	.40	$1\frac{1}{4}$	.60	$1\frac{1}{2}$	.80
$1\frac{1}{8}$	.40	$2$	.60		
$1\frac{1}{4}$	.40	$2\frac{1}{2}$	.70		

Set No. 114, \$6.75, without Screw,  $\frac{1}{8}$  to 1 in. x 16ths (13 sizes).

Set No. 116, \$6.75, with Screw,  $\frac{1}{8}$  to 1 in. x 16ths (13 sizes).

(For Ship Augers see Fig. 3336.)

## AUGER BIT BOXES.

It will be noticed with but one exception (Russell Jennings') that none of the Sets of Auger Bits are priced in cases. All Auger Bit manufacturers furnish fancy cases when desired, and many dealers in selling bits both over the counter and through catalogues, are inclined to give customers the impression that the Bit Case is "thrown in" with the set of bits—a sort of "Prize package" as it were—This is a mistake, however, and if the bit case isn't on the bill—like the old sea captain's suit of clothes—it must be paid for all the same. About 95 per cent of the ordinary run of Bit Cases are constructed so that the bits are held apart from each other and in the case by springs, hooks, clips or some devices that are in themselves weak, the result being that they need constant tinkering to keep them in order, and the bits are very apt to rattle against one another when the box is thrown down or carried about.

In view of the fact that the consumer has to pay for the case, we think he might as well have the best, especially as the best costs but little more than the poorest, and the best Bit Box or Case we know of is the Fig. 3318.

This Box, as will be seen in the cut, is of new design, and is altogether the most convenient form for holding a set of auger bits. Each bit is kept apart from the others, and the size bit wanted can be selected in an instant. The box is small, compact and strong. It is made of hardwood, neatly finished, and PATENT BIT BOX. can be stood on the bench or hung up against the wall, as desired, and can be closed when not in use. Price, each, \$0.40.

Next to this Box in point of convenience and strength, comes the Case which accompanies the Russell Jennings' set of bits (Fig. 3311).

We usually have on hand a number of styles of fancy Auger Bit Boxes arranged with clamps and fastenings for holding 13 bits. Price, each, \$0.28.

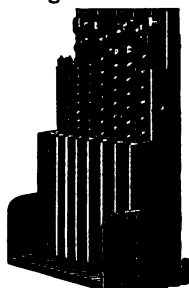


FIG. 3318.

## AUGER BIT ROLLS.

The Auger Bit Roll is coming into more general use. These Rolls are designed to contain a set of 13 auger bits, are usually made of strong canvass or leather, lined with flannel or chamois skin and have a separate pocket for each bit. We think they provide an excellent way for carrying bits. As a matter of fact, we consider them much better than any wooden box or case. They have never been offered for sale apart from the bits, but we hope before long to have at least a small variety of Auger Bit Rolls.

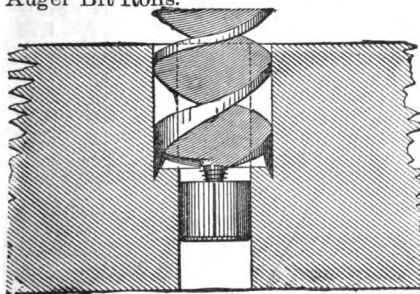


FIG. 3319. AUGER BIT GUIDE.

This Guide is a simple, little device, and, while it may not be needed often, there are times when the cost of a set

may be easily saved on a single Guide. These Guides are made of solid brass, with soft metal center to accommodate itself to the screw point without injury to the screw. They can be used for reborring a hole, or counterboring to a larger size. When applied to machine bits they permit the bit to be used at a higher speed.



These are furnished in sets of 12 sizes,  $\frac{1}{4}$  to  $1\frac{1}{8}$  by 16ths. Price, per set, \$0.90. Larger sizes furnished to order. Postage, per set, 6 cents.



FIG. 3320. BIT GAUGE.

This is a simple device for regulating depth of hole bored, without withdrawing the bit; is especially valuable where a number of holes have to be bored to a uniform depth.

No. 1, regular size, for all sizes of bits up to 1 inch, price, \$0.25; No. 2, large size, for bits up to 2 inch, price, \$0.40.

Postage, No. 1, 5 cents; No. 2, 7 cents.

## AN OLD FELLOW.

In the article on "Augers and Bits," printed elsewhere, we mentioned incidentally a number of styles that we do not handle. There are quite a few styles that we have handled, and still others that we have never sold but have seen samples of. Among these are the Andrews, Bailey, Solid Head, Taylor, Spencer, Circle Lip, Gladwin, Donaldson and Thorne. The foregoing have been for the most part "freaks," only three or four of the lot having any merit.

In the above cut we show a decided curiosity. In June, 1896, we had a letter from a friend of ours, Mr. L. H. Lamb, who travels about the country selling tools. He said, "In my travels, among many curiosities in tools I found in Vir-

ginia an 'old time' auger bit. It is something like the Irwin auger bit. The owner informed me that he had had it for years, and the party from whom he obtained it declared that it was nearly one hundred years old. He would not sell it under any circumstances but was willing that I should have a photograph taken, and as I knew you would be sufficiently interested, I did so and send you the photo under separate cover."

The above cut is engraved from the photograph, and it certainly does resemble the Irwin bit quite strongly. The Irwin bit as originally made, however, had but one lip.

All of the above rather tends to convince one at times, that "There is nothing new under the sun."

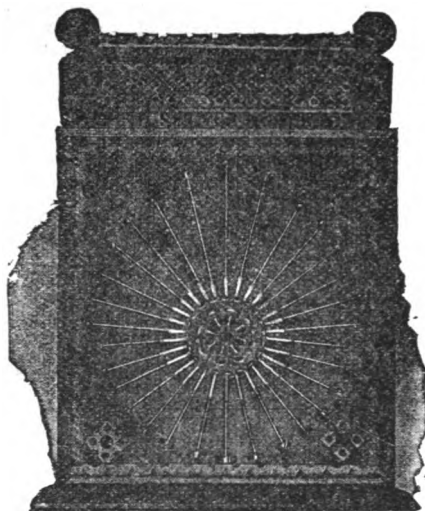


FIG. 3323 FORSTNER BITS.

For fine, smooth, true work the Forstner Bit has no equal. It supplements, but by no means entirely takes the place of the ordinary style of Auger Bits, for the reason that it is comparatively delicate, and will not stand the rough handling that the regular auger bit will. Some dealers, in advertising this bit, give the impression that it will bore a square hole, which is not the case; it has enough good points to make it an indispensable tool for nice work, and is especially useful for cabinet makers, carriage builders, pattern makers, stair builders, piano makers, etc., etc.

The Forstner Bit, unlike other bits, is guided by its circular rim instead of its centre, consequently it will bore any arc of a circle, and can be guided in any direction regardless of grain or knots, leaving a true polished surface, therefore it is preferable and more expeditious than chisel, gouge, scroll saw or lathe tool combined, for core boxes, fine and delicate patterns, veneers, screen work, scalloping, fancy scroll, twist columns, newels, ribbon moulding and mortising, etc., etc.

NOTE.—It will be noticed that the prices on sizes  $1\frac{1}{2}$  in. and larger are very much higher in proportion than the others. The call for these larger sizes being but little, they have to be forged

and made entirely by hand. We hope that some day the makers of these bits will adopt a plan by which the larger sizes can be furnished at a more reasonable price.



FIG. 3324.

## NO. 18—FORSTNER BRACE BIT.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{4}$	\$0.54	$\frac{1}{2}$	\$0.72	$1\frac{1}{2}$	\$1.04
$\frac{3}{8}$	.54	$\frac{3}{4}$	.81	$1\frac{3}{4}$	1.12
$\frac{1}{2}$	.40	$1$	.81	$1\frac{1}{2}$	1.12
$\frac{3}{4}$	.50	$1\frac{1}{4}$	.90	$1\frac{3}{4}$	4.50
$1$	.50	$1\frac{1}{2}$	.90	$1\frac{1}{2}$	6.30
$1\frac{1}{4}$	.59	$1\frac{3}{4}$	.95	$1\frac{3}{4}$	6.30
$1\frac{1}{2}$	.59	$1\frac{1}{2}$	.95	$1\frac{1}{2}$	8.10
$1\frac{3}{4}$	.72	$1\frac{3}{4}$	1.04	$2$	8.10

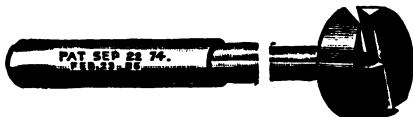


FIG. 3325.

## NO. 20—FORSTNER MACHINE BIT.

We carry these Bits in stock all with shanks  $\frac{1}{2}$  in. diam. Can furnish them with shanks  $\frac{1}{2}$  in. in diam. to order; prices are the same.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{4}$	\$0.68	$\frac{1}{2}$	\$0.90	$1\frac{1}{2}$	\$1.22
$\frac{3}{8}$	.68	$\frac{3}{4}$	.99	$1\frac{3}{4}$	1.30
$\frac{1}{2}$	.59	$1$	.99	$1\frac{1}{2}$	1.30
$\frac{3}{4}$	.68	$1\frac{1}{4}$	1.08	$1\frac{3}{4}$	4.50
$1$	.68	$1\frac{1}{2}$	1.08	$1\frac{1}{2}$	6.30
$1\frac{1}{4}$	.77	$1\frac{3}{4}$	1.12	$1\frac{1}{2}$	6.30
$1\frac{1}{2}$	.77	$1\frac{1}{2}$	1.12	$1\frac{1}{2}$	8.00
$1\frac{3}{4}$	.90	$1\frac{3}{4}$	1.22	$2$	8.00

For Bits in Sets see next page.

## THE ADAMS ART AUGER BIT.

This Bit is quite similar in style to the Forstner. As a boring bit pure and simple, we do not think it equals the Forstner. There are special attachments for cutting rosettes, and doing light, fancy work that make it for some purposes quite desirable. Will send circulars and prices of these bits on receipt of a postage stamp.

Smoothest boring bits of all

## FORSTNER BITS—IN SETS.

These Sets are packed in neat, compact boxes.

Set No. 118, \$3.60; Brace Bits, one each,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$ , 1 in. (6 sizes).

Set No. 1018, \$6.30; Brace Bits,  $\frac{3}{8}$  to  $1\frac{1}{8}$  x 8ths (9 sizes).

Set No. 2018 \$6.75; Brace Bits,  $\frac{3}{8}$  to 1 in. x 16ths (11 sizes).

Set No. 3018, \$11.25; Brace Bits,  $\frac{1}{2}$  to  $1\frac{1}{8}$  x 16ths (17 sizes).

Set No. 120, \$4.50; Machine Bits, one each,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$ , 1 in. (6 sizes).

Set No. 1020, \$7.65, Machine Bits,  $\frac{3}{8}$  to  $1\frac{1}{8}$  x 8ths (9 sizes).

Set No. 2020, \$8.55; Machine Bits,  $\frac{3}{8}$  to 1 in. x 16ths (11 sizes).

Set No. 3020, \$13.95; Machine Bits,  $\frac{1}{2}$  to  $1\frac{1}{8}$  x 16ths (17 sizes).

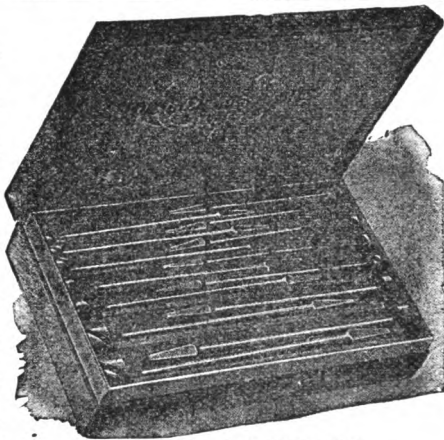


FIG. 3326. SET IN CASE.



FIG. 3327. CAR BIT.—Average length twist 12 in.; over all 16, inches.

## CAR BITS.

Many of our older customers who have had previous catalogues will notice that we have dropped out a number of different styles of Car Bits that were shown in these catalogues. Our reasons for doing so will be found in the article entitled "VARIETY" (see Index), printed in the introductory portion of the catalogue, and as it bears directly on this question, we do not deem it necessary to print it again.



FIG. 3328. NO. 22—FORD CAR BIT.

(For description see Fig. 3299.)

This Bit for clean, smooth boring in deep holes has no superior. It works easily, bores a straight hole and is durable.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{2}$	\$0.38	$\frac{1}{2}$	\$0.76	$1\frac{1}{8}$	\$1.23
$\frac{3}{8}$	.43	$\frac{3}{8}$	.83	$1\frac{1}{4}$	1.35
$\frac{1}{2}$	.48	$\frac{1}{2}$	.90	$1\frac{1}{2}$	1.43
$\frac{3}{4}$	.55	$\frac{3}{4}$	1.00	$1\frac{3}{4}$	1.50
$\frac{1}{2}$	.60	$\frac{1}{2}$	1.05	$1\frac{1}{2}$	1.57
$\frac{3}{4}$	.65	1	1.12	$1\frac{7}{8}$	1.64
$\frac{1}{2}$	.71	$1\frac{1}{4}$	1.20	$1\frac{1}{2}$	1.72



FIG. 3329. NO. 24—SHIP AUGER CAR BIT.

(For description see Fig. 3304.)

The Ship Auger Pattern Car Bit is intended for use in hard woods. It will do fairly good work in soft wood, but is not recommended for this class; bores straight and fast, and is more durable than any other form of Car Bit. We carry them in stock with Screw as shown in cut. Can furnish the same style of Bit to order without Screw; prices are the same.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{3}{8}$	\$0.60	$\frac{1}{2}$	\$0.77	1	\$0.97
$\frac{1}{2}$	.64	$\frac{3}{4}$	.80	$1\frac{1}{8}$	1.05
$\frac{3}{4}$	.67	$\frac{1}{2}$	.84	$1\frac{1}{4}$	1.10
$\frac{1}{2}$	.70	$\frac{3}{4}$	.87	$1\frac{3}{8}$	1.16
$\frac{3}{8}$	.73	$\frac{1}{2}$	.93	$1\frac{1}{2}$	1.20

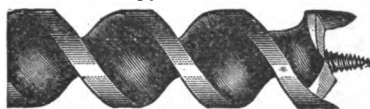


FIG. 3330. RUSSELL JENNINGS' CAR BIT.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{3}{8}$	\$0.54	$\frac{1}{2}$	\$0.80	$\frac{3}{4}$	\$1.10
$\frac{1}{2}$	.63	$\frac{1}{2}$	.86	$\frac{1}{2}$	1.19
$\frac{3}{4}$	.68	$\frac{3}{4}$	.93	1	1.28
$\frac{1}{2}$	.74	$\frac{1}{2}$	1.02	$1\frac{1}{8}$	1.36



FIG. 3331. NUT OR HAND AUGER.

## NUT AUGERS.

In Nut Augers we carry three different styles. All are the very best in their respective classes, and it merely rests with the user as to which he may select. It will be noticed there is quite a difference in the price.



FIG. 3332. NO. 28—REGULAR AUGER.

The Regular or Square Lip style (Fig. 3332) is the most commonly sold, on account of the low price. The majority of this type of Augers that are sold are of very inferior quality. We sell only the Snell Mfg. Co's make, which is, in our judgment, altogether the best in the market. The prices of this superior make are low enough in all conscience, so that there is really no necessity for anyone buying the common, poor things that are so generally offered.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{8}$	\$0.30	$1\frac{1}{4}$	\$0.56	$2\frac{3}{4}$	\$2.25
$\frac{3}{8}$	.34	$1\frac{1}{2}$	.68	3	2.63
1	.38	2	.82	$3\frac{1}{2}$	3.37
$1\frac{1}{4}$	.42	$2\frac{1}{2}$	1.50	4	4.50
$1\frac{1}{2}$	.45	$2\frac{3}{4}$	1.87		

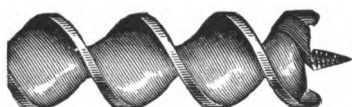


FIG. 3334. NO. 30—PERFECT AUGER.

(For description see Fig. 3303.)

Size.	Each.	Size.	Each.	Size.	Each.
1	\$0.53	$1\frac{1}{4}$	\$0.72	$1\frac{1}{2}$	\$0.97
$1\frac{1}{4}$	.59	$1\frac{1}{2}$	.88	2	1.15

## NO. 32—SHIP AUGER STYLE.

Cut at the top of page shows this Auger.

Bores the fastest and is the most durable, but does not bore so clean a hole in soft wood as the "Perfect."

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{2}$	\$0.68	$1\frac{1}{4}$	\$1.00	$1\frac{1}{2}$	\$1.35
$\frac{3}{4}$	.78	$1\frac{1}{2}$	1.12	$1\frac{3}{4}$	1.57
1	.90	$1\frac{3}{4}$	1.24	2	1.80

## SHIP AUGERS.



FIG. 3335.

NO. 33—SHIP AUGER, NO SCREW.



FIG. 3336.

NO. 34—SHIP AUGER, WITH SCREW.

(For description see Fig. 3304.)

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{2}$	\$0.43	$1\frac{1}{4}$	\$0.93	$1\frac{1}{2}$	\$1.50
$\frac{3}{4}$	.50	$1\frac{1}{2}$	.93	$1\frac{3}{4}$	1.67
$1\frac{1}{4}$	.50	$1\frac{3}{4}$	1.00	2	1.67
$1\frac{1}{2}$	.59	2	1.00	$2\frac{1}{4}$	2.67
2	.59	$2\frac{1}{4}$	1.17	$2\frac{3}{4}$	2.67
$2\frac{1}{4}$	.67	$2\frac{3}{4}$	1.17	$2\frac{7}{8}$	3.34
$2\frac{3}{4}$	.67	$3\frac{1}{4}$	1.34	$3\frac{1}{2}$	3.34
$3\frac{1}{4}$	.75	4	1.34	$3\frac{3}{4}$	4.00
4	.75	$4\frac{1}{4}$	1.43	$4\frac{1}{2}$	4.00
$4\frac{1}{4}$	.84	$4\frac{1}{2}$	1.43	$4\frac{3}{4}$	5.34
$4\frac{3}{4}$	.84	$5\frac{1}{4}$	1.50	$5\frac{1}{2}$	5.34

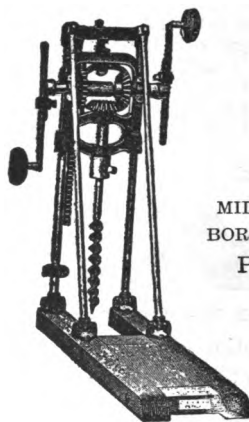


FIG. 3337.

MILLERS FALLS  
BORING MACHINE.

Price, \$7.10.

This machine may be used upright or at any angle. It is the best hand boring machine ever placed upon the market; is well fitted and finely finished, and we think it will do better work and give greater satisfaction than any other. For other styles see Figs. 3341 and 3342,



FIG. 3338. BORING MACHINE AUGER. Average length about 12 in.

**BORING MACHINE AUGERS.**

In Boring Machine Augers we carry the same styles as in Nut Augers. We beg to call attention to the fact that the Machine Bits shown in Figs. 3345 to 3359 (excepting Fig. 3351) have shanks  $\frac{1}{2}$  inch in diam., and if the occasion requires can be used in almost all styles of boring machines.

**NO. 38—SHIP AUGER STYLE BORING MACHINE AUGER.**

(For description see Fig. 3304.)

Bores the fastest and is the most durable, but is not recommended for soft woods. The cut on top of page (Fig. 3338) shows the style of lip and twist.

Size.	Each.	Size.	Each.	Size.	Each.
1	\$0.95	1 $\frac{1}{2}$	\$1.30	2	\$1.95
1 $\frac{1}{4}$	1.08	1 $\frac{3}{4}$	1.44		
1 $\frac{1}{2}$	1.18	1 $\frac{1}{2}$	1.68		

NOTE.—For Expansive Boring Machine Auger see Expansive Bits.

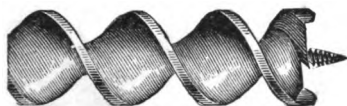


FIG. 3339. NO. 36—PERFECT BORING MACHINE AUGER.

(For description see Fig. 3303.)

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{3}{4}$	\$0.55	1 $\frac{1}{4}$	\$0.78	1 $\frac{1}{2}$	\$1.00
1	.67	1 $\frac{1}{2}$	.88	2	1.20

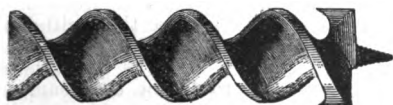


FIG. 3340. NO. 35—REGULAR BORING MACHINE AUGERS.

These are the Snell Mfg. Co's. make, and the remarks made under Fig. 3332, Regular Auger, will apply fully to these Boring Machine Augers.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{2}$	\$0.37	1	\$0.45	1 $\frac{1}{2}$	\$0.63
$\frac{3}{4}$	.37	1 $\frac{1}{4}$	.48	1 $\frac{1}{2}$	.75
$\frac{1}{2}$	.37	1 $\frac{1}{2}$	.53	2	.90
$\frac{1}{2}$	.37				

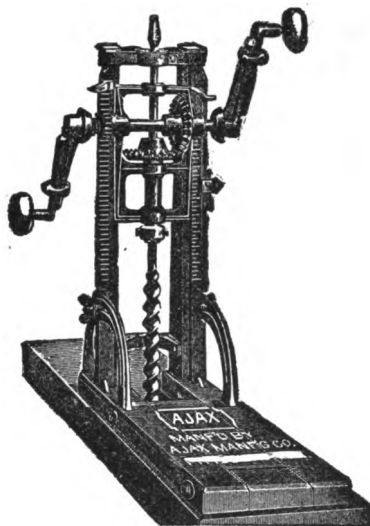


FIG. 3341. AJAX BORING MACHINE.

This machine is very simple, strong and substantial; can be set to bore any depth hole, and withdraws quickly automatically. An especial feature is that any kind of a bit can be used whether the shank is long or short, round or square. Can be used upright or at any angle; has extension arms, and folds compactly. Price, \$6.00.

FIG. 3342.  
SNELL BORING  
MACHINE.  
(Angular.)

Upright, \$3.25.  
Angular, \$3.75.

These are the ordinary type of Boring Machines, and are the best quality of this style of machine. Where there is not a great deal of boring, or in cases where a man cannot afford to pay the price of the other machines, they answer very well (see also Fig. 3337).

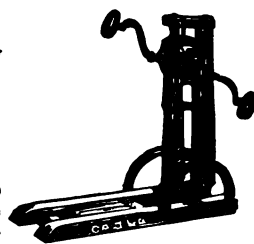




FIG. 3345. MACHINE BIT. Different lengths as per table.

## MACHINE BITS.

Machine Bits are used almost entirely by power, and the conditions under which they are worked are quite different from those under which any style of Hand Boring Bits are used. The Machine Bits we show here are such as are carried in stock by us, and such as are the most generally useful.

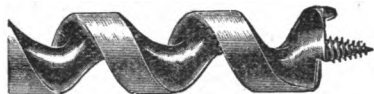


FIG. 3346.

## NO. 43—FORD MACHINE BIT.

(For description see Fig. 3299.)

We carry in stock all sizes given below with 6 in. twist; also all sizes from  $\frac{1}{4}$  to  $1\frac{1}{2}$  in. x 16ths of an inch, with 4 in. twist. The price of 4 in. twist bits are the same as the 6 in. All shanks are turned, and are  $\frac{1}{2}$  inch in diam. by 2 in. long. Special shanks take special price.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{4}$	\$0.29	$\frac{3}{8}$	\$0.58	$1\frac{1}{8}$	0.90
$\frac{5}{16}$	.32	$\frac{7}{8}$	.58	$1\frac{1}{4}$	.96
$\frac{3}{8}$	.32	$\frac{1}{2}$	.62	$1\frac{3}{8}$	1.00
$\frac{7}{16}$	.36	$\frac{3}{4}$	.62	$1\frac{1}{2}$	1.07
$\frac{1}{2}$	.36	$\frac{5}{8}$	.67	$1\frac{5}{8}$	1.12
$\frac{9}{16}$	.41	$\frac{7}{8}$	.67	$1\frac{3}{4}$	1.18
$\frac{5}{8}$	.41	$\frac{1}{2}$	.74	$1\frac{7}{8}$	1.23
$\frac{11}{16}$	.45	$\frac{3}{4}$	.74	$1\frac{1}{2}$	1.29
$\frac{3}{4}$	.45	$\frac{5}{8}$	.78	$1\frac{1}{2}$	1.41
$\frac{7}{8}$	.49	$1\frac{1}{8}$	.78	$1\frac{1}{2}$	1.50
$1\frac{1}{8}$	.49	$\frac{3}{4}$	.85	$1\frac{1}{2}$	1.62
$1\frac{1}{4}$	.52	1	.85	2	1.75
$\frac{5}{8}$	.52	$1\frac{1}{8}$	.90		

## NO. 44—FORD CAR MACHINE BIT.

With 12 inch Twist. Shanks  $\frac{1}{2}$  x 2.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{4}$	\$0.54	$\frac{1}{2}$	\$0.82	$1\frac{1}{8}$	\$1.13
$\frac{5}{16}$	.60	$\frac{3}{4}$	.86	$1\frac{1}{4}$	1.22
$\frac{3}{8}$	.68	$1\frac{1}{8}$	.93	$1\frac{1}{2}$	1.32
$\frac{1}{2}$	.75	$1\frac{1}{4}$	1.00	1	1.45

NOTE—See also Forstner Machine Bit (Fig. 3325).

## SPECIAL BITS.



FIG. 3347. COUNTERSINK.



FIG. 3348. COUNTERBORE.



FIG. 3349. SCREW SHANK.

We can furnish to order Machine Bits of almost any pattern or style, and if special bits are wanted, it will be well for us to know the kind of woods they are to bore and the conditions under which they are to be worked.

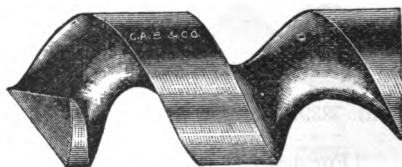


FIG. 3350.

## NO. 46—DRILL HEAD MACHINE BIT.

These Machine Bits are intended for hard wood in boring end wood only. If used on anything else they will draw in like a cork screw. Will bore an absolutely straight hole, as there is no screw or point to follow the seams or grain of the wood. The sizes we list here are carried in stock with shanks  $\frac{1}{2}$  x 2 in. and 6 in. twist. Can furnish this bit to order in any size or length of twist desired.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{4}$	\$0.34	$1\frac{1}{8}$	\$0.62	$1\frac{1}{4}$	\$1.05
$\frac{5}{16}$	.38	$\frac{3}{4}$	.68	$1\frac{1}{2}$	1.15
$\frac{3}{8}$	.44	$1\frac{1}{8}$	.72	$1\frac{3}{8}$	1.30
$\frac{7}{16}$	.48	$\frac{1}{2}$	.78	$1\frac{1}{2}$	1.45
$\frac{1}{2}$	.52	$1\frac{1}{8}$	.84		
$1\frac{1}{8}$	.56	1	.92		



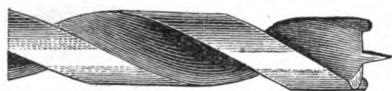


FIG. 3351. NO. 48—BIT POINT DRILL.  
(At times called Machine Bit for wood.)

Bit Point Drills are coming into quite general use; they are intended more especially for the harder woods. They work quite satisfactorily on medium and hard woods. Although somewhat higher in price than regular Machine Bits, they are in many cases much more economical, as they can be sharpened and used as long as there is any twist left. They are also very strong.

The shanks are parallel with the bit—that is—a  $\frac{1}{8}$  inch bit has a  $\frac{1}{8}$  in. shank, a  $\frac{1}{4}$  inch bit a  $\frac{1}{4}$  in. shank.

Diam.	Each.	Length.	Diam.	Each.	Length.
$\frac{1}{8}$	\$0.16	3	$\frac{1}{4}$	\$0.64	$5\frac{1}{2}$
$\frac{5}{16}$	.20	$3\frac{1}{2}$	$\frac{3}{8}$	.68	6
$\frac{3}{8}$	.24	$3\frac{3}{4}$	$\frac{1}{2}$	.76	$6\frac{1}{2}$
$\frac{7}{16}$	.28	$3\frac{1}{2}$	$\frac{5}{8}$	.80	$6\frac{1}{2}$
$\frac{1}{2}$	.32	4	$\frac{3}{4}$	.92	$6\frac{1}{2}$
$\frac{9}{16}$	.36	$4\frac{1}{2}$	$\frac{7}{8}$	1.08	7
$\frac{5}{8}$	.40	$4\frac{1}{2}$	$\frac{15}{16}$	1.32	$7\frac{1}{2}$
$\frac{11}{16}$	.44	$4\frac{1}{2}$	$\frac{1}{2}$	1.76	8
$\frac{3}{4}$	.52	5	$\frac{1}{2}$	2.07	$8\frac{1}{2}$
$\frac{7}{8}$	.56	$5\frac{1}{2}$	$\frac{15}{16}$	2.39	9
$\frac{15}{16}$	.60	$5\frac{1}{2}$	1	2.70	$9\frac{1}{2}$

With exception of the extremely large sizes, Drills can be sent by mail at very small expense.

### DRILL CHUCKS.

Notwithstanding the largely increased demand for Drill Chucks, there are a great many users of Boring Bits and Drills who have never been led to see the advantages from an economical point of view, of Drill Chucks, and out of the thousands of boring machines in use, perhaps not more than one in fifty is supplied with a suitable chuck. We refer more especially to power boring machinery, although there are many cases in which chucks can be used to advantage on hand boring machinery. Most of the power boring Machines supplied at the present time have the arbor or spindle bored with  $\frac{1}{4}$  in. hole, in which the bit is fastened with a set screw.

Drill Chucks are made to take round shank tools of any kind with shanks from 0 diameter up to their capacity, which in the different sizes range from  $\frac{1}{4}$  to  $1\frac{1}{2}$  inch. There are many points of

advantage to be gained by using these, among them, first, time saved in trying to fix up ordinary shank bits with tin, solder and various other devices; second, money saved in the difference of prices in small sized bits. For example, Fig. 3351,  $\frac{1}{8}$  No. 48 bit point drill lists at 24 cents, while Fig. 3353,  $\frac{1}{8}$  No. 50 bit point drill (which is identical, excepting that it has  $\frac{1}{8}$  inch shank) lists at 43 cents. Where a great many small bits are used, the difference saved will soon pay the cost of a chuck. Third, countersinks, reamers and other cutting tools can be made of any round steel that is conveniently at hand, and used in chuck without the trouble and expense of fitting it to exact size.

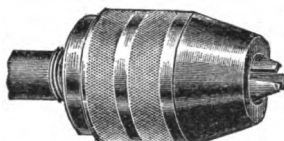


FIG. 3352.

DRILL  
CHUCK.

We carry  
in stock six-

teen different styles of Drill Chucks in 47 different sizes, and ranging in price from \$1.25 upwards. Full description and prices will be found in "A Book of Tools" (our Metal Workers' catalogue, see page 744 of this catalogue).

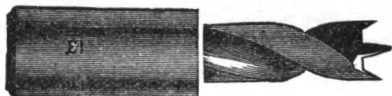


FIG. 3353. NO. 50—BIT POINT DRILL.

(With shanks  $\frac{1}{8}$  x  $2\frac{1}{2}$  inch.)

These Bits have the uniform shanks; can be used in nearly all styles of boring machines. Can also furnish Bits of this style with Morse taper shank, at the same prices.

Diam.	Each.	Length.	Diam.	Each.	Length.
$\frac{1}{8}$	\$0.40	$5\frac{1}{2}$	$\frac{1}{4}$	\$1.05	6
$\frac{5}{16}$	.40	$5\frac{1}{2}$	$\frac{3}{8}$	1.10	6
$\frac{3}{8}$	.48	$5\frac{1}{2}$	$\frac{1}{2}$	1.20	6
$\frac{7}{16}$	.48	$5\frac{1}{2}$	$\frac{5}{8}$	1.25	6
$\frac{1}{2}$	.53	6	$\frac{3}{4}$	1.30	6
$\frac{9}{16}$	.58	6	$\frac{7}{8}$	1.40	6
$\frac{5}{8}$	.64	6	$\frac{15}{16}$	1.50	$9\frac{1}{2}$
$\frac{3}{4}$	.68	6	$\frac{1}{2}$	1.92	10
$\frac{7}{8}$	.72	6	$\frac{3}{4}$	2.00	$10\frac{1}{2}$
$\frac{15}{16}$	.76	6	$\frac{1}{2}$	2.08	$10\frac{1}{2}$
$\frac{1}{2}$	.80	6	$\frac{3}{4}$	2.22	$10\frac{1}{2}$
$\frac{5}{8}$	.88	6	$\frac{1}{2}$	2.40	$10\frac{1}{2}$
$\frac{3}{4}$	.90	6	$\frac{3}{4}$	2.56	$10\frac{1}{2}$
$\frac{7}{8}$	.94	6	1	2.72	11
$\frac{15}{16}$	.98	6			



FIG. 3354.

**NO. 5—WOOD'S PATENT COMBINED BORING BIT AND COUNTERSINK.**

The above represents a Combination Bit and Counterbore or Countersink for machine. The shanks on these are  $\frac{1}{4}$  x  $1\frac{1}{2}$  in. Total length about 6 in.

This bit has a drill running through the center the entire length, which can be adjusted if desired. This drill is held in place by the spring of the shank which is slotted. The tool is tempered the entire length and can be used as long as there is any twist left to either of the bits, and the smaller drill can be replaced at little expense should it break. The sizes given in list are of the large bit, and any of these sizes can be furnished with  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  or  $\frac{5}{8}$  drills.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{8}$	\$1.50	$\frac{1}{4}$	\$2.00	$1\frac{1}{2}$	\$2.75
$\frac{1}{4}$	1.50	$\frac{3}{8}$	2.00	$1\frac{1}{2}$	3.00
$\frac{3}{8}$	1.50	$\frac{1}{2}$	2.25	$1\frac{1}{2}$	3.50
$\frac{1}{2}$	1.75	1	2.50	$1\frac{1}{2}$	4.00
$1\frac{1}{2}$	1.75				



**FIG. 3355. NO. 3—WOOD'S PATENT END BORING BIT.**

This bit is used for boring endways of the wood. It will be found an excellent tool for this purpose, having a sharper twist and no lips. Is made on the same principle as the No. 5 (Fig. 3354), and prices are the same.

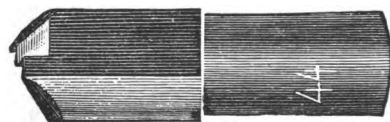


FIG. 3356.

**WOOD'S ROUTER BIT.**

Shanks  $\frac{1}{4}$  x  $1\frac{1}{2}$  inch.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{4}$	\$0.50	$\frac{1}{2}$	\$0.78	$\frac{3}{4}$	\$1.28
$\frac{1}{2}$	.50	$\frac{3}{4}$	1.00	1	1.45
$\frac{3}{4}$	.55	1	1.12	1	1.65
$1\frac{1}{2}$	.67				

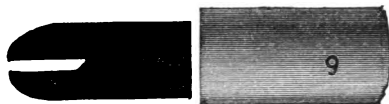


FIG. 3357.

**NO. 9—VIBRATING MORTISE BIT.**

Shanks,  $\frac{1}{4}$  x 2 in.; sizes,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  in. Price, each, \$0.85.

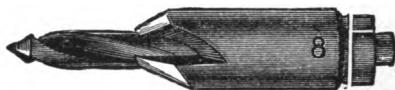


FIG. 3358.

**NO. 8—MACHINE COUNTERSINK.**

This Countersink may be used for either wood or iron. Shanks  $\frac{1}{4}$  by  $1\frac{1}{2}$ ; total length about  $4\frac{1}{2}$  in. Price, with  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  or  $\frac{5}{8}$  drills, \$1.50.

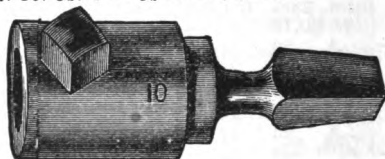


FIG. 3359. BRACE CHUCK.

Useful at times for holding  $\frac{1}{4}$  in. round shank bits in a brace. Price, \$1.00.

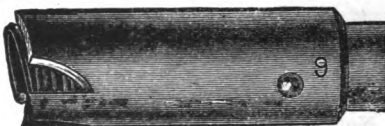


FIG. 3360. NO. 9—PLUG CUTTER.

No. 9 is used for cutting wooden plugs. It is one of the best tools of this kind. Shank,  $\frac{1}{4}$  x 2.

Size,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$
Each,	\$1.25	\$1.40	\$1.50
Size,	$\frac{1}{2}$	1	
Each,	\$2.00	\$2.25	\$2.50
			\$3.00



FIG. 3361. NO. 17—PLUG CUTTER.

Sizes,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ . Each, \$0.30; postage, 3 cts.

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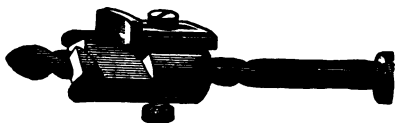


FIG. 3370.

**COMBINED ADJUSTABLE BIT.**

This Combined Bit consists of a stock that can be fitted to a brace at the upper end, and at the lower end having a "Gimlet Bit" for boring the hole for screws or screw bolts, and a "Counter-sink Bit" for boring for the plug. The two bits are held firmly in position by set screws and can be readily adjusted to any depth for long or short screws, or shallow or deep countersinks.

The tools of this kind heretofore placed on the market, while fairly efficient, have generally been made of such poor stock and bad workmanship that they have not gained much favor. Our tool is far superior to anything yet placed on the market. The Bit we use is the Morse Twist Drill, with the point ground for wood and the cutter attachment is made of one solid piece of Jessop's best tool steel. The lips are the Jennings's pattern, and we guarantee every one to work perfectly.

No. 1, for $\frac{1}{2}$ in. plug, $\frac{3}{8}$ in. Bit, ea.,	\$1.40
" 3, " $\frac{3}{8}$ " " $\frac{1}{2}$ " " "	1.50
" 4, " $\frac{1}{2}$ " " $\frac{3}{4}$ " " "	1.50
" 6, " $\frac{3}{4}$ " " 1 " " "	1.60

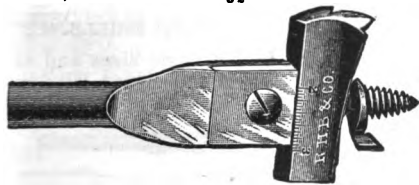


FIG. 3371. CLARK'S EXPANSIVE BIT.

The genuine Clark's Expansive Bits are made by R. H. Brown & Co. These bits are stamped on shank "William A. Clark—Cast Steel—Made by R. H. Brown & Co." and the cutters are stamped "R. H. B. & Co.," as shown in illustration. Since the expiration of the patent a few years ago, this style of bit is being made by several different concerns, but we are of the impression that the genuine bits are worth the slight difference in price. It is a very particular tool to make, and it is but reasonable to suppose that a concern

with twenty years' experience would excel in their production.

Small size, \$1.15, with 2 cutters: No. 1 boring from  $\frac{1}{4}$  to  $\frac{3}{8}$  in.; No. 2 from  $\frac{3}{8}$  to  $\frac{1}{2}$  in.

Large size, \$1.50, with 2 cutters: No. 3 boring from  $\frac{1}{2}$  to  $1\frac{1}{2}$  in.; No. 4 from  $1\frac{1}{2}$  to 3 in.

**EXTRA CUTTERS.**

No. 1, \$0.22, boring from $\frac{1}{4}$ to $\frac{3}{8}$ in.	
" 2, .28, " " $\frac{3}{8}$ to $1\frac{1}{2}$ "	
" 3, .40, " " $\frac{1}{2}$ to $1\frac{1}{2}$ "	
" 4, .45, " " $1\frac{1}{2}$ to 3 "	
" 5, .65, " " 3 to 4 "	
" 6, .90, " " 4 to 5 "	

CAPS—Small, \$0.12; Large, \$0.15.

SCREWS—Small, \$0.06; Large, \$0.08.



FIG. 3372. STEER'S EXPANSIVE BIT.

In general style this is quite similar to the Clark's. The cutters are adjusted by a screw, which holds the cutter firmly and prevents it from slipping.

Small Size, \$1.20, with 2 cutters, cuts from  $\frac{3}{8}$  to  $1\frac{1}{2}$  in.

Large Size, \$1.70, with 2 cutters, cuts from  $\frac{1}{2}$  to 3 in.

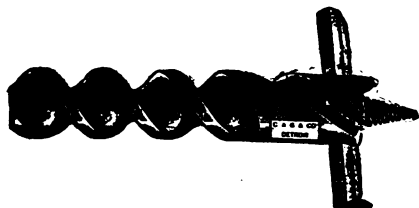


FIG. 3373.

**EXPANSIVE BORING MACHINE BIT.**

This is a strong Expansive Bit with round shank for use in boring machines; shank is  $\frac{1}{2}$  inch in diam. Can be used to good advantage in either soft or hard wood.

Large size, No. 5, \$3.00, with Nos. 7 and 8 Cutters, cutting any size from  $\frac{3}{4}$  to  $2\frac{1}{2}$  in.

An Extra Cutter, No. 9, can be furnished for this bit, which cuts from  $2\frac{1}{2}$  to 4 in. Price of Extra Cutter, \$0.75.

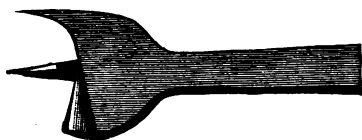


FIG. 3374. CENTER BIT.

Center Bits are used a great deal less than formerly, but for some classes of work they are quite indispensable. Like the Texan's revolver, they are not wanted often, but when needed they are needed bad. Nearly all the Center Bits sold in this country are imported from Germany; they are made in three or four qualities and the best of them are pretty poor. Our Center Bits are of English make, and the best that we can buy. We keep them in sizes by 8ths of an inch from  $\frac{1}{8}$  to 2 in.

Prices, on all sizes to  $\frac{1}{2}$  in. inclusive, \$0.18;  $\frac{3}{8}$  and 1 in., \$0.20;  $1\frac{1}{8}$  and  $1\frac{1}{2}$ , \$0.25;  $1\frac{3}{4}$  and  $1\frac{7}{8}$ , \$0.33;  $1\frac{7}{8}$  and  $1\frac{3}{4}$ , \$0.40;  $1\frac{3}{4}$  and 2 in., \$0.50.



FIG. 3375. LARGE SIZE CENTER BITS.

Above cut shows style of Center Bit in sizes larger than 2 in.  $2\frac{1}{2}$  in., \$0.75;  $2\frac{3}{4}$  in., \$0.90;  $2\frac{7}{8}$  in., \$1.25; 3 in., \$1.65.



FIG. 3376. BIT STOCK DRILLS.

The best Bit Stock Drills are made by the Morse Twist Drill & Machine Co., who are the largest Drill makers in the world. All Bit Stock Drills we sell are of this make; they will bore in either steel, iron or other metals as well as wood.

Diam.	Each.	Diam.	Each.	Diam.	Each.
$\frac{1}{8}$	\$0.08	$\frac{1}{4}$	\$0.27	$\frac{1}{2}$	\$0.60
$\frac{3}{8}$	.09	$\frac{5}{8}$	.32	$\frac{3}{4}$	.68
$\frac{1}{2}$	.11	$\frac{7}{8}$	.36	$1\frac{1}{8}$	.75
$\frac{3}{4}$	.13	$1\frac{1}{4}$	.40	$1\frac{1}{2}$	.83
$1\frac{1}{8}$	.16	$1\frac{3}{8}$	.44	$1\frac{3}{4}$	.90
$1\frac{1}{4}$	.18	$1\frac{1}{2}$	.48	$1\frac{7}{8}$	.98
$1\frac{3}{4}$	.21	$1\frac{7}{8}$	.52	$1\frac{3}{4}$	1.08
$1\frac{7}{8}$	.24	$1\frac{3}{4}$	.55	1	1.18



FIG. 3377. WOOD BORING DRILL.

This style of Drill, which is commonly known as the "Syracuse," has to a very large extent taken the place of gimlet bits of all styles (excepting the German Bit, Fig. 3379, which seems to hold its own). We think the best bits of this type are made by the Cleveland Twist Drill Co. These drills are quite similar in style to the regular Bit Stock Drill, but being used almost entirely for wood, they are not tempered quite so hard (although they will cut through iron or steel), and are ground at a sharper angle. We carry them in stock in a great variety of sizes, as per list below. For many purposes the Round Shank Machine Bits of this style will be found exceedingly useful.

We carry these in stock in the ordinary lengths, as follows (the numbers indicate the sizes in 32ds of an inch):

No.	2	3	4	5	6	7
Each,	\$0.12	\$0.12	\$0.12	\$0.13	\$0.14	\$0.18
Doz.,	1.12	1.12	1.12	1.24	1.40	1.75
No.	8	9	10	11	12	13
Each,	\$0.21	\$0.25	\$0.25	\$0.28	\$0.28	\$0.32
Doz.,	2.10	2.45	2.45	2.80	2.80	3.15
No.	14	16	18	20	22	24
Each,	\$0.32	\$0.35	\$0.38	\$0.42	\$0.45	\$0.49
Doz.,	3.15	3.50	3.85	4.20	4.55	4.90

#### ROUND SHANK WOOD DRILLS.

These come in the same sizes and at the same prices as the Brace Bits in foregoing list.



FIG. 3378.

#### BELL HANGERS' & ELECTRICIANS' DRILL

These are the same style as above, but made in long lengths. Can furnish other lengths to order.

	18 Inch.		24 Inch.		30 Inch.	
Size.	Each.	Doz.	Each.	Doz.	Each.	Doz.
$\frac{1}{8}$	\$0.49	\$4.90	\$0.63	\$6.30	\$0.77	\$7.70
$\frac{1}{4}$	.49	4.90	.63	6.30	.77	7.70
$\frac{3}{8}$	.52	5.25	.66	6.65	.84	8.40
$\frac{1}{2}$	.56	5.60	.70	7.00	.84	8.40
$\frac{3}{4}$	.63	6.30	.75	7.70	.90	9.10
$1\frac{1}{8}$	.70	7.00	.84	8.40	.95	9.80
$1\frac{1}{4}$	.84	8.40	.95	9.80	1.05	10.50
$1\frac{3}{4}$	.95	9.80	1.10	11.20	1.20	11.90



FIG. 3379. GERMAN GIMLET BITS.

We sell the imported German Gimlet Bits—the "R. H. K. Rob" brand. These Bits while higher in price than any others, are preferred by the best mechanics who claim that they are worth the difference (German high-grade tools are almost an unknown quantity, these bits being the only exception to the rule). We carry them by 32ds of an inch in sizes from  $\frac{1}{8}$  to  $\frac{1}{2}$  inch.

All sizes to  $\frac{1}{2}$  in., \$0.10 each, \$1.00 per doz. Larger sizes, \$0.13 each, \$1.25 per doz.



FIG. 3380.

## GERMAN STYLE MACHINE BIT.

A great many of these are sold to manufacturers of handles. We carry in stock two sizes:  $\frac{1}{8}$  with  $\frac{1}{8}$  shank, \$0.12 each, \$1.20 per doz.;  $\frac{1}{4}$  with  $\frac{1}{4}$  in. shank, \$0.13 each, \$1.30 per doz.



FIG. 3381. DIAMOND COUNTERSINK BIT.

No. 0,  $\frac{1}{8}$  in. diam.—bores  $\frac{1}{8}$  in. deep.

" 1, $\frac{1}{8}$ "	" "	" 1 "
" 2, $\frac{1}{8}$ "	" "	" 1 $\frac{1}{2}$ "
" 3, $\frac{1}{8}$ "	" "	" 1 $\frac{1}{2}$ "
" 4, $\frac{1}{8}$ "	" "	" 1 $\frac{1}{2}$ "

All above sizes \$0.13 each, \$1.35 per doz.

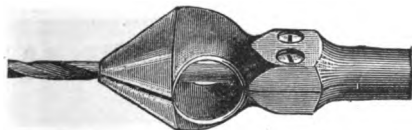


FIG. 3382.

## COUNTERSINK AND DRILL COMBINED.

This is a new tool, and in the short time that it has been on the market has met with a great deal of favor. It is used in connection with a wood drill, same as Fig. 3377. It can be used with two sizes of drills,  $\frac{1}{8}$  and  $\frac{1}{4}$  in.; price includes these 2 drills, or 2 drills of either size, as preferred. Each, \$0.75.

## COUNTERSINKS.

The first three Countersinks shown here are old and well known styles. The newer styles, shown further on, have largely taken their place. In these three styles we carry in stock only the finest quality. We do not recommend them, as we believe the newer styles are superior, but if a mechanic wants these, we will sell him the best.



FIG. 3383. ROSE COUNTERSINK.

Used for hard woods and the softer metals, such as brass, copper, etc., etc. Price, each, \$0.25.



FIG. 3384. SNAIL COUNTERSINK.

Used for wood only, \$0.20.



FIG. 3385. FLAT COUNTERSINK.

Used for metals; is rather a poor substitute for the fluted countersink (Fig. 3389.) Price, \$0.20.

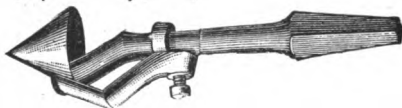


FIG. 3386. WHEELER'S COUNTERSINK.

A well known tool; price is moderate, and quality, price considered, is good. Without gauge, \$0.15; with gauge, as shown in cut, \$0.20.

## METAL BORING TOOLS.

A complete line of Twist Drills and other Metal Boring Tools will be found in our Metal Workers' Catalogue entitled "A Book of Tools" (550 pages, 2000 illustrations, sent post paid to any address upon receipt of 25 cents). See page 744, this catalogue.



FIG. 3387. S. COUNTERSINK.

This is a double lip Countersink, of fine quality. In our judgment, one of the best Countersinks for wood in the market.

No. 1, \$0.35,  $\frac{1}{8}$  in. cut; No. 2, \$0.45,  $\frac{1}{4}$  in. cut.

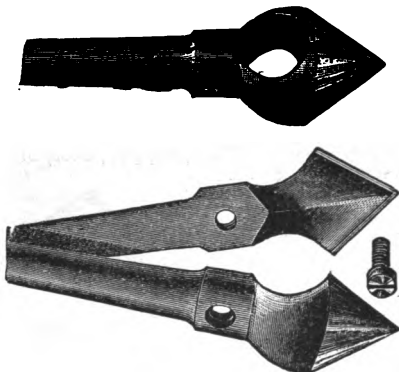


FIG. 3388. NEW COUNTERSINK.

The feature in this is that it may be opened for sharpening; it is a good, serviceable tool. Price, \$0.30.



FIG. 3389. FLUTED COUNTERSINK.

For metals, either hard or soft, this type of Countersink is undoubtedly the best of all. Can be sharpened without losing shape. Two sizes: No. 1, \$0.50,  $\frac{1}{8}$  in. diam.; No. 2, \$0.75,  $\frac{1}{4}$  in. diam. We have these also with  $\frac{1}{2}$  in. shank for machine. Same sizes and same prices.



FIG. 3390. BIT HANDLE.

This will be found a very useful device; it holds all common sizes of auger or gimlet bits. Price, \$0.20; postage, 6 cents.



FIG. 3391. SQUARE REAMER.

These Reamers are made of Jessop's steel, and are of excellent quality. Price, each, \$0.20.



FIG. 3392. FLUTED REAMER.

These Reamers are rapidly supplanting the older styles of square, half-round and octagon reamers. They ream out and make true, smooth holes in wood or any kind of metal. Each reamer tapers  $\frac{1}{4}$  of an inch, and follows from the smallest to the largest.

Size,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Each,	\$0.23	\$0.28	\$0.33	\$0.39	\$0.45

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Each,	\$0.55	\$0.66	\$0.77	\$0.88

Set of 5,  $\frac{1}{8}$  to  $\frac{1}{2}$ , in case, \$1.70; Set of 9,  $\frac{1}{8}$  to  $1\frac{1}{2}$ , in case, \$4.40.

NOTE.—“A Book of Tools” (our Metal Workers' Catalogue) contains a complete line of Reamers and Countersinks for metal work. See description page 744 of this catalogue.

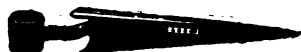


FIG. 3393. BUNG BORER.

Common style. Price includes handle.

Size,	$1\frac{1}{2}$	$1\frac{1}{4}$	2	$2\frac{1}{2}$
Each,	\$0.60	\$0.75	\$1.00	\$1.60

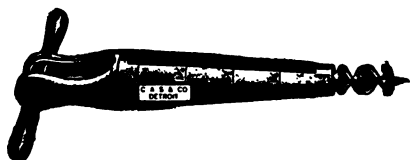


FIG. 3394. GRADUATED BUNG BORER.

This is, we believe, the Best style of Bung Borer on the market. The auger is of the Cook pattern, which is altogether the best style for this class of work.

No.	1	2	3
Each,	\$1.50	\$2.00	\$3.00
Cuts,	$\frac{1}{8}$ to $1\frac{1}{2}$	$1\frac{1}{2}$ to 2	$1\frac{1}{2}$ to 3

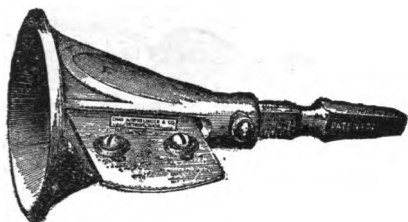


FIG. 3395. PATENT SPOKE POINTER.

These have the knife held with two screws, and cut a much longer taper than the old style pointer. The adjustable shank should be set at the figure on its scale corresponding to the required size of the tenon; it will then leave the spoke the exact size required to receive the hollow auger.

No. 1, \$0.65, capacity up to  $\frac{1}{4}$  inch.

" 2, \$1.00, " "  $\frac{1}{2}$  "

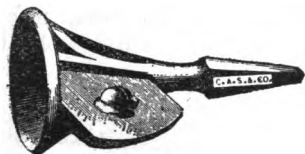


FIG. 3396. DOWEL POINTER.

A plain small tool of the above type; capacity up to  $\frac{1}{4}$  in. Price, \$0.35.



FIG. 3397. DOWEL SHARPENER.

A small tool for Brace use; light and handy. Price, \$0.25.



FIG. 3398. DOWEL PLATE.

Solid steel plate, 6 inches long, with five holes,  $\frac{1}{4}$  to  $\frac{1}{2}$  in. Price, \$0.40.



FIG. 3499. HOLLOW AUGER.

This, in our judgment, is the best style of plain Hollow Auger made.

Size,	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
Each,	\$0.67	\$0.67	\$0.67	\$0.75	\$0.75	\$0.75
Size,	$\frac{1}{2}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$
Each,	\$1.10	\$1.10	\$1.20	\$1.40	\$1.50	\$1.50

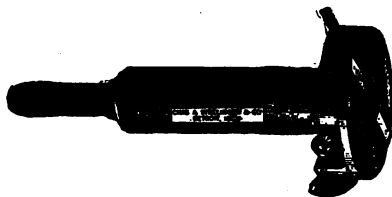


FIG. 3400.

HOLLOW AUGER FOR MACHINE.

These have  $\frac{1}{4}$  inch round shanks for machine use. For price add \$0.50 each to price of Fig. 3499.

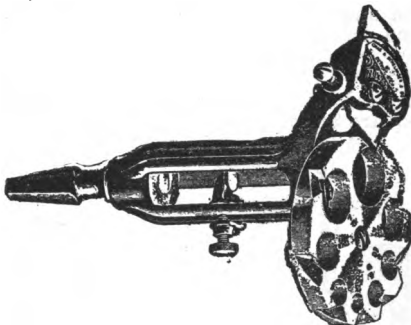


FIG. 3401.

BONNEY'S PATTERNS HOLLOW AUGER.

This is an old favorite. Although not as convenient perhaps as some of the later styles, it does the work well and is preferred by many. The knife can be adjusted to cut any desired bevel on the shoulder, and the tool can be adjusted to cut any tenon the desired length. The following sizes can be cut:  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1 inch. Price, \$1.95.

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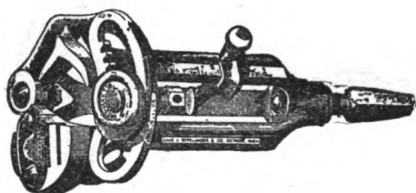


FIG. 3402.

**STEARNS' NO. 3 HOLLOW AUGER.**

This is perhaps the best known and most popular style of Adjustable Hollow Auger. There are imitations, but the genuine is the best.

This tool cuts any size tenon from  $\frac{1}{4}$  to  $1\frac{1}{2}$  in. Price, \$3.90.

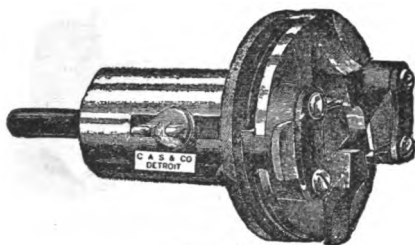


FIG. 3403.

**UNIVERSAL HOLLOW AUGER.**

The above illustration represents an old and well known tool, very efficient and free from complications. Cuts any size from  $\frac{1}{4}$  to  $1\frac{1}{2}$  inch, and has Depth Gauge. With Round Shank (as shown in cut), \$5.00; with both Round and Square Shank (for brace), \$5.50.

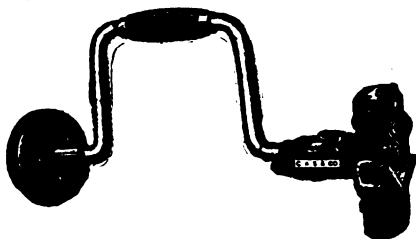


FIG. 3404. GOODELL HOLLOW AUGER.

This is a first-class tool in all respects, and has one or two especially desirable features. It has a Steel Brace Sweep; size 14 in. Being fitted to this sweep, it works entirely true which is not always the case when used in an ordinary brace. Can be adjusted to cut from  $\frac{1}{4}$  to  $1\frac{1}{2}$  in. Price, complete, \$3.80.

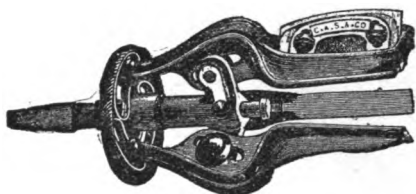


FIG. 3405. ADJUSTABLE TAPER AUGER.

This works something like a hollow auger; it is used for cutting tenons on poles, shafts, whiffletrees, etc. Can be adjusted so as to cut any taper, accommodating itself to the different makes of pole and shaft tips up to the regular inch tip. Price, Each, \$2.50.



FIG. 3406. ROGER'S AUGER HANDLE.

A compact and handy tool. Price, each, \$0.40.



FIG. 3407. PATENT AUGER HANDLE.

This handle is suitable for all sizes augers, is strong and well made, centers perfectly, and holds auger shanks of all shapes and sizes. Price, each, \$0.50.



FIG. 3408.

**PRATT'S RATCHET AUGER HANDLE.**

Will hold almost every size of augers and bit shanks. Can be fixed so as to be used like a common auger handle, or by putting on the ratchet can be used with both handles, but without shifting the hands. In cramped places one handle is taken off and placed at a right angle with the other (shown in cut). The metal part is polished and nickel-plated. Under some conditions it may be used as a ratchet drill, and is altogether a unique and remarkably useful tool. Price, each, \$2.00.

**COMMON AUGER HANDLES.**

Made of good, sound hickory; all sizes. Price, each, \$0.12.



## NAIL SETS AND PUNCHES.

We present here a new line of Nail Sets and Punches. These are made of the best quality of steel, are tempered at both ends, and we believe the best tools of this class that have been placed upon the market. The knurl body makes it easy to hold them without slipping through the fingers, and the cup point on the Nail Set prevents it from slipping off the nail head.

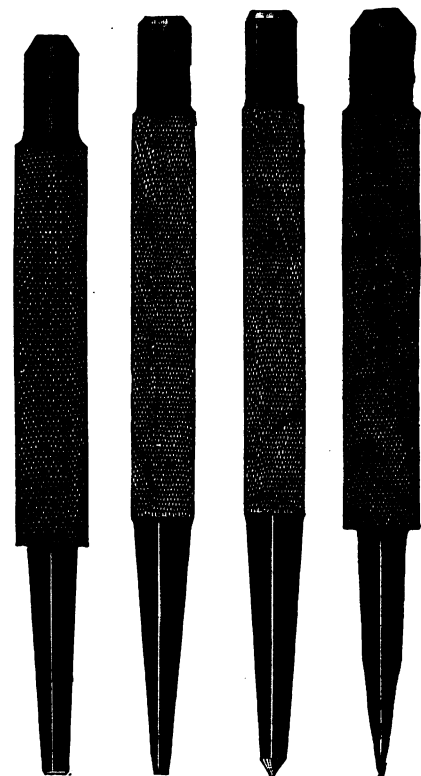


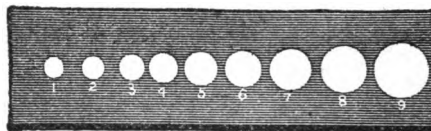
FIG 3410. NAIL SET. FIG 3411. SOLID PUNCH. FIG 3412. CENTER PUNCH. FIG 3413. PRICK PUNCH.

## NAIL SETS.

Body,	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
Point,	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$

Price, each, \$0.10; doz., \$1.10.

## SOLID PUNCHES.



The cut shows the different sizes of points; the bodies are  $\frac{1}{4}$  and  $\frac{1}{2}$  diam.

Nos. 1 to 5, each, \$0.20; doz., \$2.00.  
Nos. 6 to 9, each, \$0.25; doz., \$2.50.

## CENTER PUNCHES.

Body,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Each,	\$0.20	\$0.20	\$0.25	\$0.30
Doz.	2.00	2.00	2.50	3.00

## PRICK PUNCH.

One size only; each, \$0.25; doz., \$2.50.

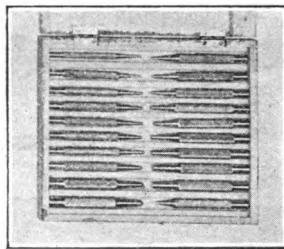


FIG. 3414. SET OF PUNCHES.

We furnish an entire set of Nail Sets and Punches (20 in number) put up in compact case. A very useful and handsome outfit. Price, complete, \$3.00.



FIG. 3415. COLD CHISEL.

Our Cold Chisels are made from best quality tool steel, well tempered; average length about 6 $\frac{1}{2}$  inches.

Size, in.	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
Each,	\$0.18	\$0.20	\$0.20	\$0.25	\$0.30
Size, in.	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	
Each,	\$0.35	\$0.40	\$0.45	\$0.60	

Brick Chisels about 18 in. long, of  $\frac{1}{2}$  in. octagon steel, 75 cents.

In our *Metal Workers' Catalogue* "A Book of Tools" will be found a very complete line of Punches and Punching Machinery.



FIG. 3430. WHITCOMB, ROUND.



FIG. 3431. VICTOR, FLAT.



FIG. 3432. MAYHEW, FLAT.

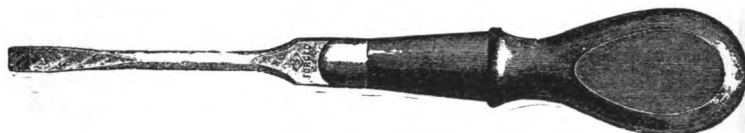


FIG. 3433. MAYHEW, ROUND.

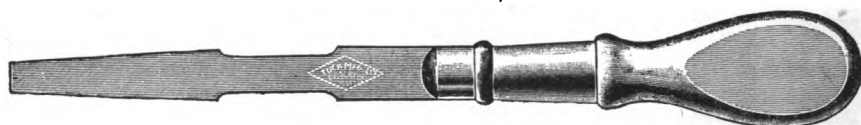


FIG. 3434. TUCK, FLAT.



FIG. 3435. GIANT SCREW DRIVER.



FIG. 3436. PIANO SCREW DRIVER.



FIG. 3437. JEWELERS' SCREW DRIVER.



FIG. 3438. BAR SCREW DRIVER.

## SCREW DRIVERS.

We present here the most complete line of first-class Screw Drivers ever shown in a catalogue. The Whitcomb (Fig. 3430) and Victor (Fig. 3431) Drivers are of excellent quality and low in price; the Mayhew Drivers (Figs. 3432-3) are medium-priced goods, but are better in quality than the majority of so-called first-class screw drivers. The Giant (Fig. 3435), Tuck (Fig. 3434), Piano (Fig. 3436), Jewelers' (Fig. 3437), Bar (Fig. 3438), and Clark's (Fig. 3440), are all of the very highest grade. The sizes of Screw Drivers as given in the following lists indicate the length of blade only; handles measure from 4 to 6 inches, according to size. An ordinary 5 inch Screw Driver measures about 10 inches over all.

FIG. 3430. WHITCOMB, ROUND.

Forged Steel Blades, Nickel Plated Ferrules, Cherry-Stained Hardwood Handles.

Size,	2	3	4	5	6
Each,	\$0.10	\$0.11	\$0.12	\$0.14	\$0.16

FIG. 3431. VICTOR, FLAT.

Dark Handles, Nickel Plated Ferrules.

Size,	3	4	5	6
Each,	\$0.11	\$0.12	\$0.15	\$0.17

FIG. 3432. MAYHEW, FLAT.

Blades forged from best Cast Steel, Steel Ferrules Nickel Plated, Polished Ebonized Handles.

Size,	2	3	4	5
Each,	\$0.17	\$0.17	\$0.20	\$0.23
Size,	6	8	10	12
Each,	\$0.28	\$0.35	\$0.45	\$0.65

FIG. 3433. MAYHEW ROUND.

Same sizes and prices as the Mayhew Flat Blade Driver.

FIG. 3434. TUCK, FLAT.

This is the best Flat Screw Driver in the market to-day. The handles are of choice Applewood, Nickel Plated Steel Ferrules.

Size,	3	4	5	6	8
Each,	\$0.23	\$0.27	\$0.34	\$0.40	\$0.55

FIG. 3435. GIANT SCREW DRIVER.

The Giant driver is a heavy, strong Screw Driver, of the type known as "Champion," and, in our judgment, it is superior to the Champion or any other driver of this type. It is the highest priced screw driver in the market, and therefore ought to be the best. These drivers have heavy, solid Rosewood Handles, and are handsomely finished.

Size,	3	4	5	6	8
Each,	\$0.25	\$0.30	\$0.37	\$0.44	\$0.58
Size,	10	12	18	24	
Each,	\$0.70	\$0.84	\$1.50	\$2.00	

FIG. 3436. PIANO SCREW DRIVER.

This driver, though light, is surprisingly strong. The blades are forged of Stub's steel, and measure in diam. from  $\frac{1}{8}$  in the smallest size to  $\frac{3}{4}$  in the largest size. Handles are solid Rosewood, Octagon shape. It is a great favorite for light work.

Size,	2	3	4	5
Each,	\$0.22	\$0.27	\$0.30	\$0.35
Size,	6	8	10	12
Each,	\$0.40	\$0.45	\$0.55	\$0.65

FIG. 3437. JEWELERS' SCREW DRIVER.

This driver is used for light work of all descriptions. It has solid Rosewood Handle, Nickel Plated Steel Ferrule. Comes in two sizes, 2 and 3 in. blades. Price, either size, \$0.28.

FIG. 3438. BAR SCREW DRIVER.

A thin blade driver, for very light, delicate work. The blade is a little over  $\frac{1}{4}$  in. diam. Useful for working about electrical and philosophical apparatus, typewriters, etc., etc.

Size,	4	6	8	10
Each,	\$0.20	\$0.25	\$0.35	\$0.45



FIG. 3439. PIANO OR CABINET BIT.

This is a long Screw Driver Bit. Price, 6 in., \$0.25; 8 in., \$0.35; postage, 5 cents.

In regular Screw Driver Bits we know of nothing as good as the Clark's Bits, which are illustrated and priced under Fig. 3440.

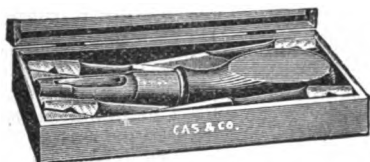


FIG. 3440. CLARK'S SCREW DRIVER.

The Clark's Screw Driver Set is the gem of our collection. We have sold thousands of these in the past twenty-five years, and have never had a defective or poor blade returned. It is better suited for general work than any other driver in the market. For light work, such as driving screws, say  $\frac{1}{4}$  in. and under, it is perhaps a little too heavy, but is well suited for anything above this size up to screws as large as 4 in. long by  $\frac{1}{2}$  in. diam.

This Set in connection with a 3 or 4 inch Piano Driver makes a complete outfit for general carpenter work, in connection with the 3 inch Piano and 10 inch Giant for the cabinet maker or pattern maker, and in connection with the 12 inch Giant for the millwright. As Brace Screw Drivers these bits have no superiors. The No. 1 (small size) measures  $\frac{1}{4}$  in. on the face; No. 2,  $\frac{1}{2}$ ; No. 3,  $\frac{3}{4}$ ; No. 4,  $1\frac{1}{2}$  in.

Price of Clark's Set, with 4 Bits, in neat Wooden Box, \$1.00; postage, 19 cts. Extra Handles, \$0.25; postage, 7 cts. Extra Blades, Nos. 1, 2 and 3, \$0.20 each; No. 4, \$0.25.

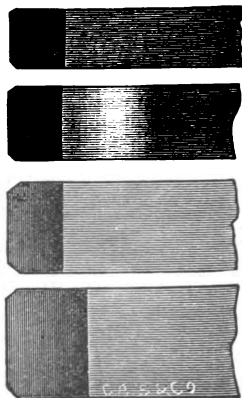


FIG. 3441.

(Full size cut of Bits in Clark Set.)

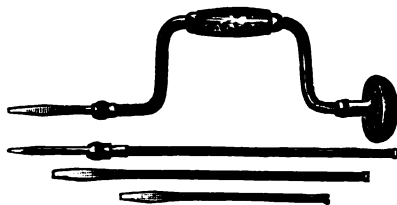


FIG. 3442. G70 BRACE SCREW DRIVER.

For many classes of work this will be found an uncommonly complete and useful tool. It has a 6 inch Sweep, Cocabola Head and Handle, and Chuck for holding the interchangeable blades, which is strong and quickly operated. It is provided with four blades from 4 to 12 inches long, and has a 12 inch extension, which in combination with the blades gives a variety of 4, 8, 12, 16, 20 and 24 inches in length.

Price, complete, \$1.50; postage, 35 cts.

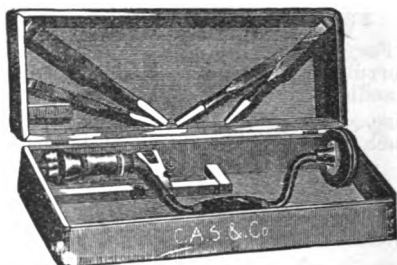


FIG. 3443. BRACE SCREW DRIVER SET.

This Set includes a Nickel Plated Ratchet Brace with 4 forged steel bits, all in a fancy varnished Box. It makes a very handy set as the brace can be used independently for other work.

Price, per Set, \$1.50.

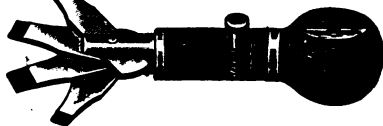


FIG. 3444. BILLINGS &amp; SPENCER POCKET SCREW DRIVER.

This combines four sizes of Screw Drivers in one handle. It is a handsomely made and finished tool, useful for electricians, the household, sports men, and any one desiring a handy tool. Price, \$1.00; postage, 6 cts; length, when closed,  $3\frac{1}{4}$  in.

FIG. 3445.

## RATCHET SCREW DRIVER.

We believe that this is altogether the best, as well as the handsomest, Ratchet Screw Driver made. It drives a screw in or out with the ratchet, or may be made stationary. The whole length is 11 inches. The handle Cocobola, highly polished, and all metal parts heavily nickel plated.

Price, \$1.00; postage, 12c.

## RATCHET SCREW DRIVER SET.

This is quite similar to the Ratchet driver shown in Fig. 3445, but has a Double Pawl and the bits are interchangeable. With this are furnished 3 Bits, 5, 7 and 9 inches long.

Complete in Case, price, \$1.75; postage, 25 cents.

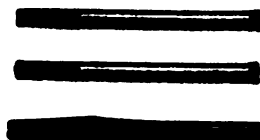


FIG. 3446. G25 SCREW DRIVER SET.

This Set consists of a Hardwood Handle, nicely finished, together with 3 Screw Driver Blades, suitable for light and medium work.

Price, \$0.50; postage, 9 cents.

## G20 TOOL SET.

This is similar to the Screw Driver Set, excepting that it has a Square Reamer in place of one of the Screw Drivers. Price, \$0.50; postage, 9 cts

## SPIRAL SCREW DRIVERS.

This article is intended not so much as a history of Spiral Screw Drivers, but as a history of our experience with Spiral Screw Drivers. At different times during the years 1877 and 1878 we had a number of calls for a screw driver that operated by pushing. The inquirers had heard of it, and an occasional inquirer stated that he had seen one, but we could in no conceivable way locate one of these drivers, or obtain a sample, and we had about come to the conclusion that the Spiral Screw Driver was a "Will o' the Wisp" (a sort of fairy tale as it were), and existed only in the imaginations of the inquirers, when one day a cabinet-maker employed by the Pullman Car Co. came into our store, and incidentally informed us that one of his shopmates, a newcomer from the East, had one of these drivers. At some little pains and expense we secured this driver, and were thus enabled to get the name and address of the manufacturers. It was the Allard Spiral Screw Driver and quite similar in design and construction to the present style. We procured a stock of these, and sold hundreds of them, the selling price at that time being \$3.00 each. Two or three years later the supply ceased. The only reason we could learn was that the demand had grown so, that the maker was unable to supply it, on account of insufficient machinery, and so had *stopped making them entirely* in order to build more machinery. We always thought this was a very queer proceeding, but, at any rate, other styles were brought out from time to time, and this class of screw driver is almost as well known—if not quite as commonly used—as the ordinary style.

The Spiral Screw driver ranks among the most wonderful labor-saving tools ever invented, and this method of driving small and medium sized screws is an entire revolution. It saves fully two-thirds of the time, as it will drive screws in either soft or hard wood in one-third of the time taken by an ordinary screw driver. It is operated by simply pushing on the handle.

**CAUTION—BE SURE AND OIL OFTEN. THERE IS GREAT FRICTION, AND THE TOOL WILL LAST TWICE AS LONG IF PROPERLY OILED.**

In the past ten or fifteen years we have handled eighteen different makes of Spiral Screw Drivers, including thirty-two different sizes and styles. Among them the Allard, Baush, Rapid, Ellrich, Forest City, Eureka, Eclipse, Electric, Goodell Howard-Allard, Jones, Haberle, Mueller, Millers Falls, Prior's, Reed's, Shaver and Wright.

At the time of compiling this catalogue we had in stock eleven of the foregoing makes and styles (the other six having been discarded on account of their having no especial merit). In order to avoid multiplicity and confusion, we found it necessary to cut down this line, retaining only such as were, in our judgment, the best in their respective classes. As all of the eleven styles had more or less merit, it was not altogether an easy matter to decide which should be kept, and so every point had to be gone over and considered carefully.

Without going into details too much, and perhaps for the reason of demonstrating how thoroughly all the various tools in this catalogue have been considered, we may explain why two or three well known Spiral Drivers are not shown here. The Forest City Spiral

Screw Driver is altogether the most ingenious and complete tool in this line that we have ever seen. It has more motions than any other, and many improvements, but the mechanism is rather complex. The chuck for holding the bits is insufficient, and we do not believe that it has either the strength or wearing qualities of the others.

The Mueller Driver is a strong, practical tool, well made, but for the work for which a Spiral Screw Driver is best adapted, we think it is too heavy.

There have been four improvements since the Allard was first perfected. First, the chuck or holder by which the tools could be changed, so that different sizes of bits could be used. Second, the right and left spiral (see Fig. 3448), so that the tool could be run either hand. Third, the loose collar (see Fig. 3447), which remains stationary while the shaft revolves; and Fourth, the continuous motion in one direction. There is but one driver that contains all of these points—the Forest City—and this, for reasons stated above, we felt obliged to leave out. The No. 22 (Fig. 3448) contains the three points first named.

**TO SUM UP—**We believe that the line of Spiral Screw Drivers shown here embraces all the best qualities which can possibly be found in this class of tools.

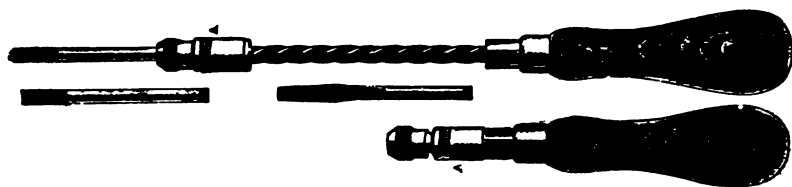


FIG. 3447. G40 SPIRAL SCREW DRIVER.

This Driver can be used as a Spiral, a Ratchet, or a Plain Screw Driver, so if it is found that a screw cannot be driven automatically, it can be readily done by using as a Ratchet or Plain Screw Driver. It is very simple in construction, is strong and durable, and will not get out of order. Three sizes of bits are furnished with each driver.

The slant of the spiral determines the strength, or rather the relative power

of the Spiral Screw Driver. The less the slant-angle the greater the power. The No. 1 Driver slants 40 degrees, the No. 2, 30 degrees, the No. 3, 20 degrees. The No. 2 size is the most commonly used, the No. 3 being recommended for heavy work.

No. ....	1	2	3
Each.....	\$1.00	\$1.20	\$1.35
Lgth. Extended	14 in.	16½ in.	18 in.
Postage.....	12 cts.	14 cts.	16 cts.



FIG. 3448. NO. 22 SPIRAL SCREW DRIVER.

This Driver is of the same design and finish as the G40 line. It has two separate and distinct spirals, each working entirely independent of the other, and can be used for both driving and drawing screws automatically. Its value as a tool for driving screws is no way detracted from by reason of its reversible mechanism, being therefore superior to

a screw driver having a cross spiral. The diamond shaped portions of a cross spiral are apt to batter up, and in time catch and bind. Not the least attractive feature of this driver is the price, which, quality and convenience considered, is very low.

Price, with 3 Bits, \$1.50; postage, 18 cents.

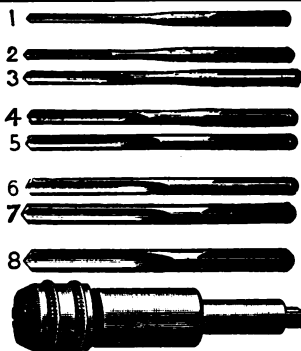


FIG. 3449. DRILL ATTACHMENTS.

These attachments can be used in connection with the foregoing Spiral

Screw Drivers, and while by no means as effective as the Automatic Drills, are a most excellent substitute, at a moderate price. The Attachment consists of a Chuck and 8 Drill Points, as shown in cut. In ordering, please state size of driver for which they are intended.

Price, complete, \$0.65; postage, 5 cts.



FIG. 3450. BICYCLE NIPPLE BIT.

This Bit can be used in any of the foregoing drivers, and will be found a very useful adjunct.

Price, \$0.25; postage, 2 cents.

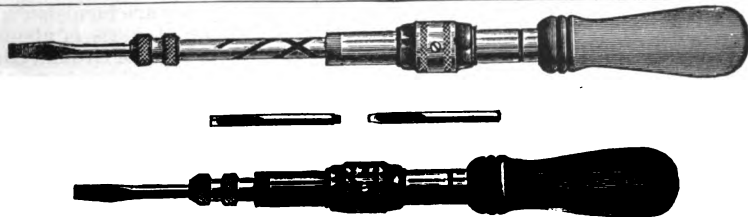


FIG. 3451. JONES SPIRAL SCREW DRIVER.

The Jones Spiral Screw Driver (Fig. 3451), like the others, may be used as a Spiral or an ordinary Screw Driver. It is a somewhat heavier tool than either of the foregoing; has a double spiral, and is reversible at any point. Can be used for driving or drawing. Has been improved by the addition of a loose sleeve at end of spiral, and is altogether a very fine tool.

Price, \$1.75; postage, 24 cents.

### SPECIAL NOTICE.

We can usually furnish, when desired, any style of Spiral Screw Driver that may be called for. As stated in a former portion of this article, we believe that in the line shown here are embraced the best qualities of this class of tool, but if for any reason other styles are wanted—and we consider the styles called for as being reliable tools—we will be pleased to supply them.

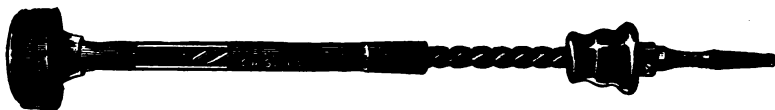


FIG. 3452. NO. 1—REID'S LIGHTNING BRACE.



FIG. 3453. NO. 2—REID'S LIGHTNING BRACE.

These tools are strong and serviceable; they may be used either automatically, running the bit both backward and forward, or to turn the bit one way only. The No. 1 Brace measures when extended about 27 inches. It is in some respects rather a clumsy tool, but has

many admirers, and we sell large quantities of them.

No. 1, \$1.65, including 1 Screw Driver Bit.

No. 2, \$1.35, including 2 Screw Driver Bits and 1 Boring Bit.

## LEVELS AND LEVEL GLASSES.

It is a somewhat singular fact that notwithstanding the great improvements that have been made in almost all kinds of tools, until the present time one of the most important tools, the Level, has not been materially changed. To be sure, within the past eight or ten years there have been changes in form and style, but the most essential feature, the level tube—or level glass as it is most commonly called—has remained practically the same, and it made no difference whether one bought a common little iron level costing 10 cents, or a handsome rosewood, brass-bound level costing seven or eight dollars, the glasses in all cases were the same light, flimsy things that broke if you looked at them, and were usually inaccurate.

This order of things has been changed, and we are now glad to say that by reason of improved machinery and processes, we can furnish our Proved and Marked, and Ground Level Glasses, also Levels of various styles, with either the Proved or Ground Glasses, at very reasonable prices.

### LEVEL GLASSES.

All of our Level Glasses are slightly curved, so as to bring the bubble to the center quickly. The bubble in a glass that is absolutely straight is too "lively," and if the Level is moved the least bit, it sends the bubble to the end at once,

thus taking more time, and frequently causing annoyance.



FIG. 3454. PROVED LEVEL GLASSES.

These are made from fine, white, tough glass; they are about one-half thicker than ordinary level glasses. Each Glass is tested, and by a patented process marked exactly in the center with a distinct black line. The marking is permanent, and cannot be obliterated. One of the best things about these Glasses is the very reasonable price at which they are furnished. The outside diameter of glass is about the same as given in table of Ground Glasses (Fig. 3455).

Length, each, 1½ to 2½ in., \$0.15; 3 and 3½ in., \$0.20; 4 and 4½ in., \$0.25.

The above prices include postage, and we send with each Glass a sufficient quantity of specially prepared plaster to set it.



FIG. 3455. GROUND LEVEL GLASSES.

Ground Level Glasses are superior in all respects. The inside surfaces are ground absolutely smooth and true, and thus the bubble is made extremely sensitive. The bubbles in these Glasses are about again as long as in the ordinary glass. These are marked in the



same manner as the Proved glasses, excepting that in the small sizes they have two marks, and in the large sizes four marks as shown in cut. The cost is considerably less than one-half of former prices, and this very low price will enable those who have good Level Stocks to replace the ordinary Glasses at moderate expense.

Length, 1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$
Each, \$0.50	\$0.50	\$0.50	\$0.60	\$0.65
Diam. $\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Length, 3	3 $\frac{1}{2}$	4	5	6
Each, \$0.75	\$0.80	\$1.00	\$1.25	\$1.50
Diam. $\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$

The above prices include postage, and we send with each glass a sufficient quantity of specially prepared plaster of paris to set it.



FIG. 3456. STYLE NO. P18.



FIG. 3457. STYLE NOS. G95, G96 AND G98.



FIG. 3458. STYLE NOS. P25 AND P30 DUPLEX.



FIG. 3459. STYLE NO. P35 MASON'S.



FIG. 3460. STYLE NOS. G70 AND G80 MASON'S.

#### WOOD LEVELS AND PLUMBS.

In Figs. 3456 to 3460 we show illustrations to represent clearly the various styles of Wood Levels and Plumbs. All of these have the shallow grooves along both sides, this being a great improvement. The old form of Level is rather hard to handle when one is walking on stagings, or working on the

frame of a building, and this feature, although a simple one, will prove a convenience.

These Levels and Plumbs are provided with either our Proved, Tested and Marked, or Ground Glasses, as indicated in the description. They are made of the finest wood, thoroughly seasoned and handsomely finished, and

every Level is sent out perfectly accurate and right.

It will be noticed that we list the majority of these in lengths of either 24 or 28 in. When desired we can furnish any of these styles in the 30 in. length at the same price, although we do not usually carry them in stock.

#### PRICE LIST.

No. P3, \$0.90, Proved and Marked Glasses, Cherry, Polished and Brass Tipped; lengths 18, 24 and 28 in.

No. P14, \$1.00, Proved and Marked Glasses, Mahogany, Polished, Brass Lipped Side View, and Brass Tipped; lengths 12 and 18 in.

No. P18, \$1.50, Proved and Marked Glasses, Cherry, French Polish and Brass Tipped; lengths 24 and 28 in.

#### GROUND GLASS LEVELS.

The five styles represented by Fig. 3457 and priced here are furnished only with Ground Glasses.

No. G60, \$2.75, Ground Glasses, Mahogany, French Polish, Brass Lipped Side Views; lengths 24 and 28 in.

No. G90, \$3.05, same as No. G60, but Brass Tipped.

No. G95, \$5.50, Ground Glasses, Mahogany, French Polish, Brass Bound, Brass Lipped Side Views; lengths 24 and 28 in.

No. G96, \$6.50, same as No. G95, but Rosewood.

No. G98, \$3.75, same as No. G96, but in only one length, 12 in.

#### DUPLEX LEVELS AND PLUMBS.

These Levels have the ordinary form of leveling glass, set in the top surface of the stock. For any uses where an observation of the glass, sidewise, may be found convenient, an additional leveling glass is set in the side, at the opposite end from the plumb. Both glasses are protected by Brass Discs, can be seen from either side, and are inserted in the level with the least possible removal of wood from the stock.

No. P25, \$1.90, Proved and Marked Glasses, Mahogany, Polished, Brass Tipped; lengths 24 and 28 in.

No. P30, \$1.45, same as No. P25, but Cherry, Polished.

Can furnish either of the above with Ground Glasses at an additional cost of \$1.90.

#### MASON'S LEVELS AND PLUMBS.

No. P35, \$1.50, Proved and Marked Glasses, Cherry, Polished, adapted for Plumb Bob and Line.

The following two styles of Masons' Levels are quite new: The two Plumb Glasses are set in separate holes, but each on the right-hand side. This will enable the workman to plumb work below where he stands, or above him, without turning the level stock end for end, which is found to be a great convenience.

No. G70, \$3.50, Ground Glasses, Mahogany, French Polish, 2 Brass Lipped Side Views; length 36 in.

No. G80, \$4.00, same as No. G70, but 42 in. long.

#### METALLIC LEVELS.

We present here entirely new lines of Metallic Levels. More especially in the smaller sizes, and for some classes of work, Levels made of metal possess advantages over those made of wood. With very few exceptions all the Levels described in this article have either our Proved and Marked, or Ground Level Glasses.



FIG. 3461. NO. 46 POCKET LEVEL.

This Level is of Iron, with Brass Top Plate; has Groove and Set Screw, and can be used on a square or straight edge. With Proved and Marked Level Glass, price, \$0.25; postage 5 cents.

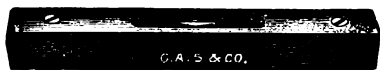


FIG. 3462. SQUARE LEVEL.

This Level is a very popular one; is called a Pocket Level, although the sharp corners would likely play havoc with the pocket if worn too constantly. It measures  $\frac{1}{4}$  in square, 6 in. long, and has  $2\frac{1}{2}$  in. Proved and Marked Glass. Price, \$0.75; postage 10 cents.



FIG. 3463. HEXAGON POCKET LEVEL.

These Levels are very convenient, are of Brass, Nickel Plated, and nicely finished.

No. 3, size  $\frac{1}{2}$  x 3 in., ordinary glass, price \$0.35; postage 5 cents.

No. 4, size  $\frac{1}{2}$  x 4 in., ordinary glass, price \$0.50; postage 7 cents.

No. 33 $\frac{1}{2}$ , size  $\frac{1}{2}$  x 2 $\frac{1}{2}$  in., Ground glass, price \$0.75; postage 4 cents.



FIG. 3464. NO. 33.

This is the same Level as No. 33 $\frac{1}{2}$ , provided with detachable base piece; can be used on square or straight edge. Price with Ground Glass, \$1.25; postage 6 cents.

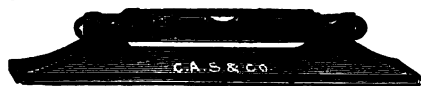


FIG. 3465. NO. 34.

This line of Levels is intended to take the place of the imported wood and brass Levels shown in former catalogues. They are provided with fine Ground glasses, are strong, well made and compact. The outer shell can be turned so as to completely protect the glass from damage when not in use. An especially attractive feature about these Levels is the prices at which they are furnished; which are less than one-half of former prices on goods of like quality.

4 in., 1 $\frac{1}{2}$  in. Ground Glass, \$1.25; postage 7 cents.

6 in., 2 $\frac{1}{2}$  in. Ground Glass, \$1.50; postage 12 cents.

8 in., 3 in. Ground Glass, \$2.00; postage 20 cents.

10 in., 3 $\frac{1}{2}$  in. Ground Glass, \$2.50; postage 25 cents.



FIG. 3466. NO. 34V.

This is the same Level as the 6 in. No. 34, excepting that it has an accur-

ate V slot planed lengthwise in bottom, which is  $\frac{1}{4}$  in. wide and  $\frac{1}{8}$  deep; is useful for leveling up anything with a round surface, like shafting, etc. Price \$1.50; postage 12 cents.



FIG. 3467. STEEL LEVEL.

These Levels, like the No. 34 line, are new and in some respects unique. They possess the following superior qualities: Lightness, Strength, Accuracy, Large Bearing Surface, and Fine Finish. To those engaged in building, a Level of this style possesses some especial advantages, having both top and bottom level surfaces. Being made of steel instead of cast iron, there is no danger of their being broken in falling from a distance.

No. 49, 12 in., with Double Plumb, Proved and Marked Glasses, each, \$2.00.

No. 49G, same as No. 49, but with Ground Glasses, \$3.50.

No. 50, 18 in., with Double Plumb, Proved and Marked Glasses, each, \$2.50.

No. 50G, same as No. 50, but with Ground Glasses, \$4.00.

No. 51, 24 in., with Double Plumb, Proved and Marked Glasses, each, \$3.00.

No. 51G, same as No. 51, but with Ground Glasses, \$4.75.

### C. O. D.

The practice of sending goods C. O. D. (Collect On Delivery) is, fortunately, growing less common. It entails extra expense both to the buyer and seller, and usually indicates distrust and suspicion. In these days it is not a difficult matter to ascertain the commercial standing of a business house.

To those desiring it, we will be glad to furnish ample evidence of the honesty, integrity and commercial standing of our house.

Therefore, we will *not* send goods C. O. D.



FIG. 3468. HYDROSTATIC LEVEL.

In lining up shaftings, finding levels at long distances, over obstructions or around corners, more can be accomplished in one hour with this instrument than can be done in a day with an ordinary spirit level. It not only tells that points are out of level, but shows, in inches and fractions of an inch, how much they are out of level. Any workman can use it. Accurate for all distances.

No. 1 is suitable for leveling on machinery, shafting, etc., and shows a variation from level line of 3½ inches and can be used with 25 ft. of hose. Price, \$10.00, including 25 ft. of Tube, 1 Coupling and Case. Extra Tubing 15 cts. per ft.

No. 2 is same as above, except larger, showing a variation of 6 inches, and can be used with 100 ft. of hose. Price, \$15.00, including 25 ft. of tube, 1 Coupling and Case. Extra Tubing 20 cts. per ft.

These Levels are each put up in a hardwood Lock Box, which is included in the price given above.

To prevent freezing, add about 10 per cent of glycerine with the water before filling the Level.

#### DIRECTIONS.

When leveling two points a gauge is placed on each, the stop cocks are opened, and when the water comes to rest, closed again, thus confining it to the exact height indicated. The instrument may then be picked up and carried to the light if necessary, and the exact position of the water located on the scales. Any length of hose desired may be used between the gauges and accurate levels taken over any distance the hose will permit.

Try Square.  
Mitre Square.  
T Square.  
Marking Gauge.  
Mortise Gauge.  
Depth Gauge.  
Mitre Level.  
Spirit Level and Plumb.

Beam Compass.

Inside Square  
for making  
boxes and  
frames.



FIG. 3469. ODD JOBS.

This is a sort of "Jack of all trades" tool, and of course like most J. of A. T., is "Master of none." However, it is a most excellent and convenient little tool. There are probably not less than fifty thousand of these in use, and the sale is constantly increasing. Price, complete as shown, \$0.60; postage 10 cts.

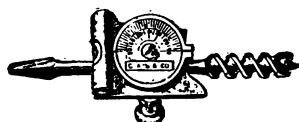
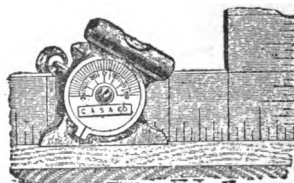


FIG. 3470. UNIQUE POCKET LEVEL.

This tool combines a Pocket Level and Plumb, Inclinator and Bevel. Can be applied to a square, straight edge, and to boring bits. Nicely finished, Nickel Plated on Brass. Price, Each, \$0.90; postage 6 cents.

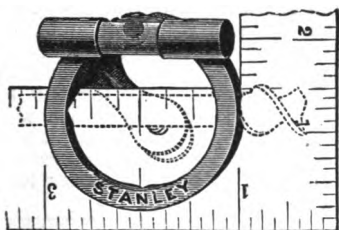


FIG. 3471. BIT AND SQUARE LEVEL.

The cut shows the application of this tool. Price \$0.25; postage 4 cents.

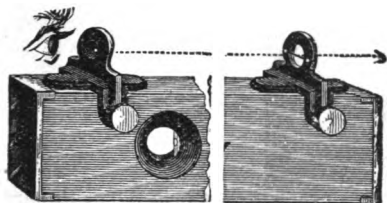


FIG. 3472. LEVEL SIGHTS.

This is an ingenious device which can be attached to almost any style of Level, and furnishes a convenient and accurate means for leveling at a distance. Price, per Pair, complete, \$0.60.

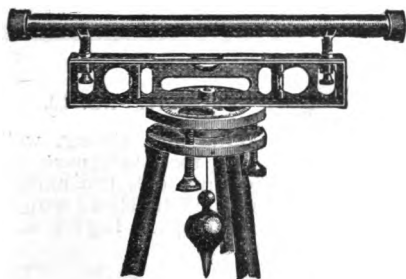


FIG. 3473. LEVELING INSTRUMENT.

This is the most durable Leveling Instrument in the market for the money. Adapted for use of Architects, Carpenters, Builders, Stone-masons and others, for leveling, obtaining angles, etc. This instrument consists of a tripod, to the head of which is connected an upper plate carrying a graduated arc and a level with telescope sights.

Will forward upon application, circu-

lars giving complete description of the Transit and Leveling Instrument.

With Plain Glass in level, Each, \$12.50  
" Ground " " " " 14.00

Weights 13½ pounds when packed for shipment. Directions sent with Instrument.

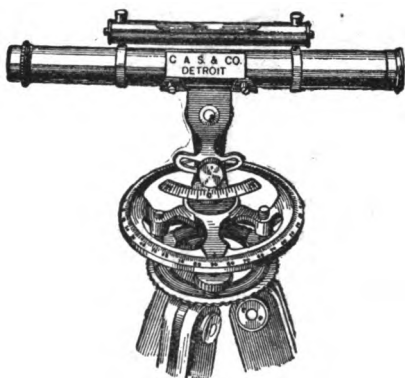


FIG. 3474. LAND LEVEL.

This Level is, we believe, the only low priced instrument on the market that combines the working features of the finer engineering transits and levels. It is practically indispensable to builders, county surveyors and farmers, is a great labor saver to the millwright in lining and setting up shafting, to the builder and bricklayer a valuable substitute for the primitive level board commonly used in setting up foundations, floors, sills and running grades. It can be used for angulation, level lines, grading streets, sewers and drains. The construction is simple, having as few parts as possible. Telescope is 8½ in. long, with achromatic objectives and magnifying powers ten times. Cross wires are fixed so that there is no danger of losing the adjustment. The Level is provided with adjusting screws, and telescope and level mounted on a swivel bearing, enabling it to be clamped in any position. The arc is graduated into degrees, instrument is screwed to a substantial tripod, and packed in wooden carrying case, very portable.

Land Level for Horizontal Angles, price, \$24.00.

Land Level for Horizontal and Vertical Angles, price, \$30.00.

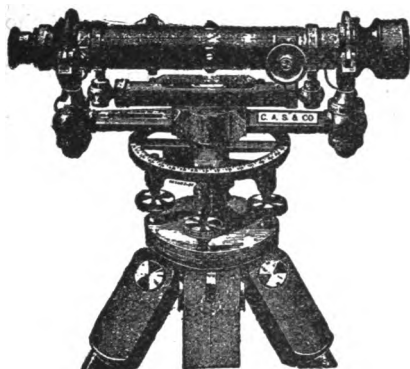


FIG. 3475. ARCHITECTS' LEVEL.

This Level has met with a very large sale among architects, builders, millwrights, and others engaged in construction, and among engineers and surveyors by whom it is used in city work. It has a telescope 12 inches long, with dust shade and cross-hairs, fine divided bubble, object glass with rack-movement, eye piece adjustable, horizontal circle 3 in. divided to degrees with vernier reading to 5 minutes.

The Instrument is screwed on tripod, and is packed in box with Plumb Bob, Reading Glass, Screw Driver, Adjusting Pins, and Metal Trivet. Taken altogether, it is a most serviceable and compact instrument. Price, complete, \$55.00.

We can furnish the same Level fitted with Compass, with  $3\frac{1}{4}$  in. needle, at an additional cost of \$15.00.

## TRY SQUARES.

We present here a very complete line of Try Squares; a number of styles shown in former catalogues are omitted, while three or four new ones have been added. The Try Square (Fig. 3478) with hardened blade, is a new tool, and is, we believe, the best wood workers' Try Square in the market. The Starrett Combination Square (Fig. 3483) still holds its own as a favorite among those who want a first-class tool at a reasonable price. No tool we sell has ever met with greater favor than this, and at the reduced prices the demand will no doubt be still further increased. Among the Try Squares omitted are

the old styles of rosewood stock, graduated blade and rosewood stock combination. There has been so much competition in these that the goods of this class in the market are for the most part unreliable and unfit for use, and as good Try Squares can be furnished at so low a price, it seems unnecessary for us to handle, or our customers to buy the others.

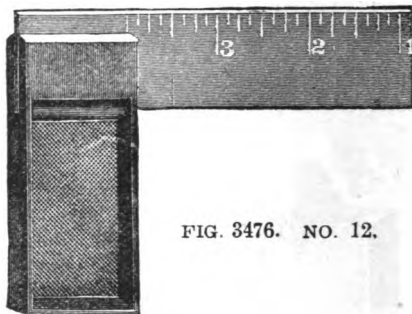


FIG. 3476. NO. 12.

This is our lowest priced Try Square, and an excellent tool at the price. It is square inside and out, the blade is graduated, the handle Nickel Plated.

Size,	4	6	8	10	12
Each,	\$0.22	\$0.25	\$0.35	\$0.40	\$0.50

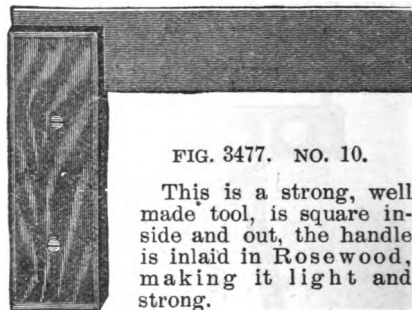


FIG. 3477. NO. 10.

This is a strong, well made tool, is square inside and out, the handle is inlaid in Rosewood, making it light and strong.

Size,	4	6	8	10	12
Each,	\$0.50	\$0.60	\$0.80	\$1.10	\$1.25

NOTE—In a "Book of Tools" (our metal workers' catalogue) will be found a complete line of Machinists' Squares, Bevels and Protractors. See page 744 of this book.

TOOLS BY MAIL—A great many Tools described and illustrated in this book can be sent by mail. We will be pleased to state cost of mailing upon application.



FIG. 3478. NO. 61.

This is, we believe, the best Try Square that has been placed upon the market for wood workers' use since Darling, Brown & Sharpe discontinued making wood workers' squares (about ten years ago). There is a demand for a fine Try Square of this class, and we believe that in this Square will be found the desired qualities. The blade is hardened, and not graduated. This Square and the No. 60 are guaranteed to be absolutely accurate.

Size,	4	6	9	12
Each,	\$1.25	\$1.75	\$2.25	\$3.00

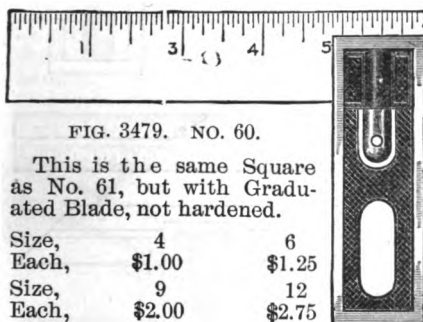


FIG. 3479. NO. 60.

This is the same Square as No. 61, but with Graduated Blade, not hardened.

Size,	4	6
Each,	\$1.00	\$1.25
Size,	9	12
Each,	\$2.00	\$2.75

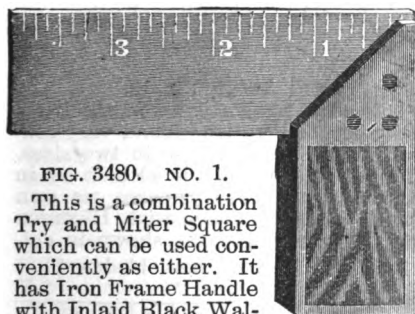
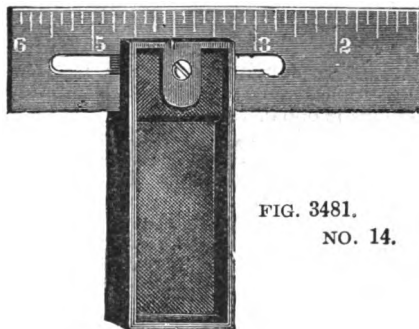


FIG. 3480. NO. 1.

This is a combination Try and Miter Square which can be used conveniently as either. It has Iron Frame Handle with Inlaid Black Walnut Sides, Graduated Steel Blades, square inside and out.

Size,	4	6	8
Each,	\$0.50	\$0.65	\$0.75

FIG. 3481.  
NO. 14.

This is in general style the same as No. 12. The blade can be secured at any point. It will be found an excellent tool in doing short work about windows, doors, etc.

Size,	4	6
Each,	\$0.25	\$0.30



FIG. 3482. NO. 15.

Improved Try and Miter Square, with Cast Brass Stock and Plain Steel Blade,  $7\frac{1}{2}$  in. long, Blued. The face of the stock is  $\frac{3}{4}$  x  $\frac{3}{8}$ , while the extending portion is  $1\frac{3}{8}$  x  $1\frac{1}{2}$ . This admits of use in many places not possible with No. 1. Price, \$0.90.

**TEARING CATALOGUES**—Every article in this catalogue is very plainly described, either by figure number, regular number, or name; and we beg our customers not to cut or tear out pages, or parts of pages, as this mutilates the book, and when done to any extent, destroys it for reference.

THIS BOOK is copyrighted and we caution all parties against using, without our written permission, any of the original matter contained herein.

## COMBINATION SQUARE.

As a rule, Combination Tools do not amount to much; there are but few exceptions. Starrett's Combination Square is one of these few. It has been on the market many years, and its excellent qualities have been well tested.

We know of no other tool that has been so generally and largely sold to all classes of mechanics, both wood and metal workers. It embraces a list of tools which, if bought separately, would cost at least twice—and perhaps three times—as much. All parts are accurately and well made. The price has lately been reduced materially, by reason of largely increased production and improved facilities.

## SPECIAL COMBINATION SQUARE.

(Not illustrated.)

This is the same style as the foregoing, but larger and heavier. Is designed for the use of manufacturers who desire to keep a reliable standard. No center head is made for these tools; the blades are  $1\frac{1}{2}$  in. wide,  $\frac{1}{8}$  in. thick; stock is  $8\frac{1}{2}$  in. 18 in., \$6.00; 24 in. \$7.00.

METRIC SQUARES—For Squares graduated in Metric System, see next page, Fig. 3488.

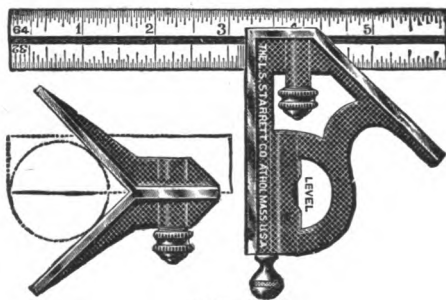


FIG. 3483.

## STARRETT'S COMBINATION SQUARE.

Starrett's Square, shown above, combines the following tools: Try Square with adjustable blade, Center Square, Miter Square, Scale, Straight Edge, Depth Gauge, Level, Plumb and Scratch Awl. A Bevel Protractor Head (Fig. 3486) is made to fit these Squares, making it a most complete tool.

## WITHOUT CENTER HEAD.

Size,	6	9	12	18	24
Each,	\$1.35	\$1.60	\$1.80	\$2.25	\$3.15

## WITH CENTER HEAD

Size,	6	9	12	18	24
Each,	\$1.80	\$2.25	\$2.70	\$3.15	\$4.05

NOTE.—We may add here that the patent on the Combination Square expired recently, since which time there have been a number of similar styles placed upon the market. We think that the Squares of this type made by the Starrett Co. will be found superior, and are to be preferred at a slight difference in cost.

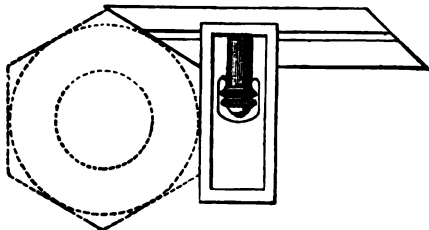
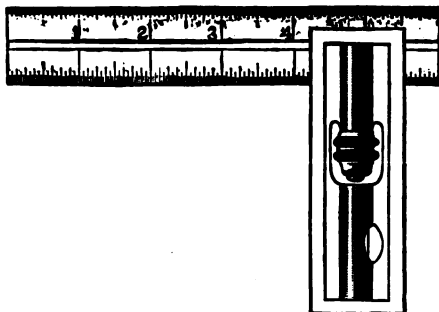


FIG. 3484. NO. 13.

This is a Double Square, which for many purposes will be found very convenient. We have these in two sizes. The 6 inch size has a level bulb set in stock. With these Squares we can furnish an extra blade with Hexagon and Octagon Angles, as shown in cut. 4 inch, \$1.25; with both blades, \$1.65  
6 " 2.00; " " " 2.50

WHEN ORDERING please do not fail to give the Figure Number and Size wanted. Long delays are not infrequent when the proper sizes and kinds are not specified—this is important.





FIG. 3485.  
SLIDING T  
BEVEL.

This is the best Bevel of its class on the market, although it isn't as good as we wish it were. We think the Bevel that the Leonard Bailey Co. used to make was a better tool, but we have been unable to procure these for a good many years, and we presume they are no longer made. However, this is better than most and a very good tool at the price; has steel blade with parallel edges, the blade is secured at any angle by turning the thumb screw at lower end of handle. Sides are flat, enabling the tool to be used in any position.

Size,	6	8	10
Each,	\$0.45	\$0.50	\$0.60

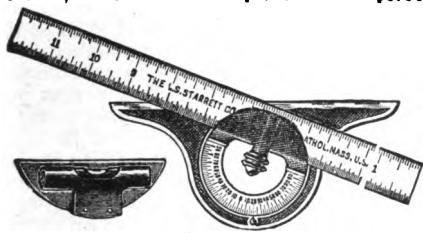


FIG. 3486. NO. 12.

This cut shows an improved Bevel Protractor, an Adjustable Rule held firmly at any point by a thumb nut passing through a revolving turret, which is nicely graduated in degrees from 0 to 90, both right and left, and can be accurately adjusted to show any angle. The adjustable level which can be attached in place of the rule, is a valuable auxiliary, to show any degree. The blades in these are the same as those used in Combination Square (Fig. 3483); the head is 7 in. long.

Size,	9	12	18	24
Each,	\$2.70	\$2.93	\$3.60	\$4.05

Protractor Head only \$1.80.

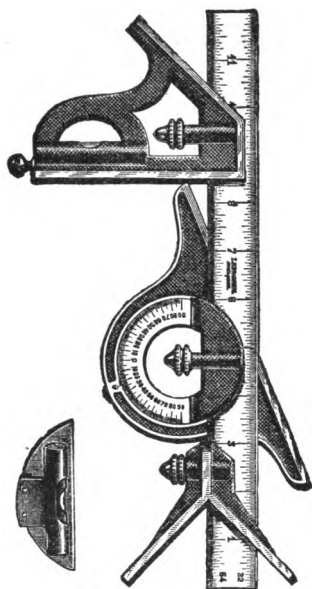


FIG. 3487. COMBINATION SET.

This cut shows the Combination Square (Fig. 3483) with Center Head and 7 inch Bevel Protractor Head (Fig. 3486). Each Head may be instantly removed, or replaced and used interchangeably with the scale, thus forming a most useful combination set of tools.

	SETS COMPLETE.			
Size,	9	12	18	24
Each,	\$4.05	\$4.50	\$5.18	\$5.63

#### METRIC SQUARES AND PROTRACTORS.

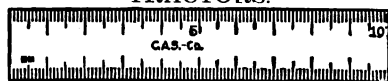


FIG. 3488. METRIC RULE.

We can furnish the Double Square (Fig. 3484), Combination Square (Fig. 3483), Bevel Protractor (Fig. 3486), and Combination Set (Fig. 3487) graduated in the Metric system. Sizes of blades furnished are as follows, in centimetres and decimal equivalents in inches:

C. M.	10	15	20	30	45	60
In.	3.94	5.9	7.87	11.81	17.72	23.62

The list prices of tools marked in Metric measurements are the same as those listed in inches; thus 10, 15, 20, 30, 45 and 60 C. M. take the same prices as 4, 6, 9, 12, 18 and 24 inches.

## STEEL SQUARES.

Those who have copies of our former catalogues will notice that we have made quite a change in the matter of Steel Squares. We present here an entirely new line, there being but four styles, while in our earlier catalogues we displayed and priced as many as eighteen, some of which were too low in price to admit of their being even of fair quality, in fact the wonder is, not that the Squares commonly sold in the stores are so poor, but that, considering the price, they are so good.

The Squares described and priced here are, as regards the essential features, of our own design. Steel Squares, as commonly made and sold, have not been changed in any particular in nearly twenty years, and for some time past we have had ideas of improving them, which we have now carried into effect.

**AS TO GRADUATION**—It will be understood that we do not look for the same degree of accuracy and refinement in a carpenter's steel square as in a fine, high-priced machinist's square. Still we must have practical accuracy, and the graduations on our Squares will not vary more than  $\frac{1}{16}$  of an inch. As a rule, they will be found correct.

**AS TO FIGURES AND TABLES**—The Tables and Figures on our Squares will be found clearly and plainly marked. Fig. 3489 shows a half-tone engraving taken direct from a photograph of a portion of a No. 1000 Square. Fig. 3490 shows a corresponding section of one of a number of so-called first-class Squares that were bought by us in open market. The Square that this is taken from, is known to the trade as No. 100, is the highest priced and presumably the best. It will be noticed that not only is the marking wretchedly bad and indistinct, but incorrect as well. Under the figure 4 notice that the figures 314 and 318 are transposed. An error of this kind in the marking of the board measure on a Square might in a single instance result in the loss of enough to purchase one hundred Squares.

**AS TO FINISH**—When we come to consider the question of finish, we are strongly reminded of the story of the Frenchman who has been in this country but a short time, and whose know-

ledge of English was somewhat limited. He asked,

"Vot is ze name of ze leequid drink zat is Contreeducation?"

"What do you mean?" asked his friend.

"Ze gentleman puts in ze viskee to make eet strong and ze votaire to make eet week, ze lemon to make eet sour and ze sugare to make eet sweet, and zen he says 'here's to you', and dreenks eet heemself."

"Oh! You mean Punch?"

"Oui, Paunch; zat ees eet."

The finish that Square makers put on their goods is "Contreeducation." A Square like our No. 1000 has 2571 graduations and rulings, and 870 figures. These graduations and figures are intended to be read by the mechanic, and yet all Square makers defeat the purpose by putting as high a polish on Squares as—they can afford to, and in the nickel plated Squares the polish is increased and intensified.

In our judgment, this high polish is a defect, especially in an article like a steel square which is largely used out-of-doors and in the sunlight.

The nickel plating is intended—in a large measure—as a preventive of rust, but this object is defeated when—after a thin coating of nickel is applied to the Square—it is buffed and polished to an extent that removes a considerable portion of the nickel, and as a rust preventive amounts to nothing.\*

Our Squares are furnished in three styles of Finish: First, the Plain Finish, which is a high but not a polished finish, quite similar in appearance to finish on Darling, Brown & Sharpe's rules, squares and other small tools. Second, the Plain Nickel Finish; this consists of a

*(Continued on page 728.)*

\*One manufacturer has lately brought out a line of Squares with a "Blued" finish, the graduations and figures being filled with a white composition. It is an attractive finish, and, if permanent, would for this class of tool be most excellent. The trouble is that a blued finish rusts almost as easily as a bright finish; emery cloth must be used to take off the rust, the rust and dirt are ground into the white figures, and there you are.

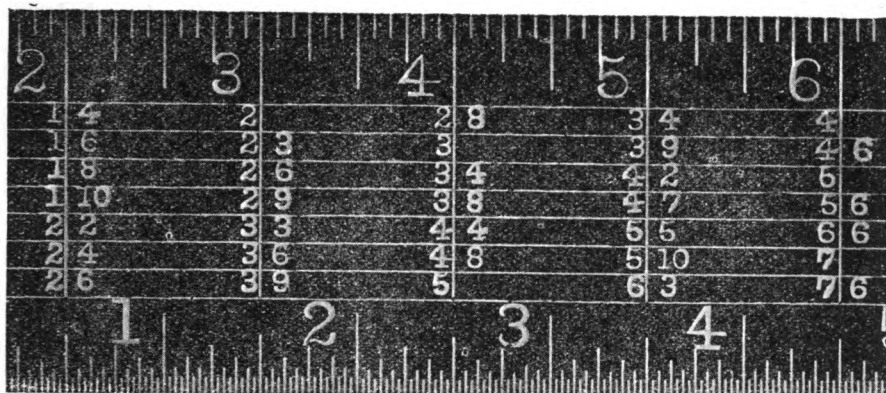


FIG. 3489. SECTION OF C. A. S. &amp; CO'S NO. 1000 STEEL SQUARE.

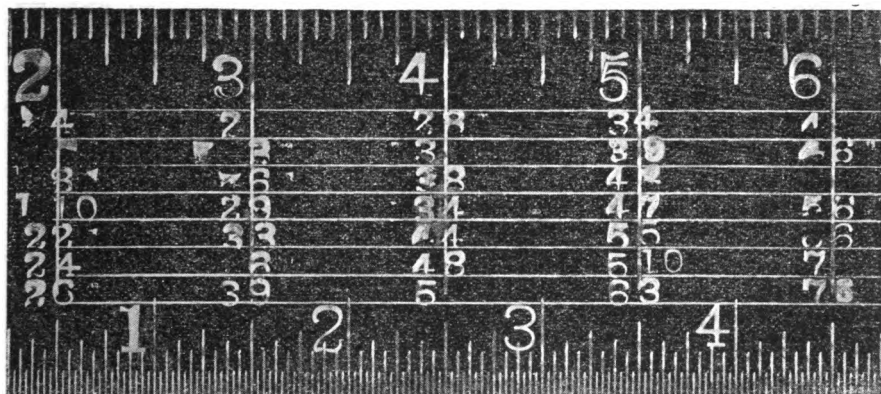


FIG. 3490. SECTION OF A WARRANTED (?) NO. 100 STEEL SQUARE.

The above illustrations speak for themselves. Fig. 3489 represents a Square taken out of our stock. Fig. 3490 represents a corresponding section of a Square bought in open market, and of a concern who "warrant them in all respects." In this Square, out of 76 figures 10 are missing, 11 are totally illegible, and the most of the re-

mainder are indistinct to a greater or less extent. Pretty tough, isn't it? The graduations are reasonably accurate, but very rough.

Illustrations are obtained by photographing the squares after filling in the lines with a white composition, both Squares being treated precisely alike.

heavy coating of nickel which is not polished, but left as it comes from the nickeling process. The surface is a frosted, silvery color, the graduations and figures are easily read in all lights. Third, the "Rustless" Finish. For this finish the Squares are first highly polished, then heavily copper plated, again polished, nickel plated and finished in plain nickel. We believe that this is the only process that will render a Square proof against rust.

Mr. W. S. BROWN, of Minneapolis, Minn., writes:

"I have used one of your Rustless Squares for some time on ornamental plaster work. My work is in lime, plaster, shellac and similar wet materials; have been obliged to use a zinc square on account of the rusting of steel, but your Square fills the bill per-

fectly and is the first I have ever had that would stand."

We know of the class of work done by Mr. Brown and think it furnishes the severest test a Square can be put to.

AS TO ACCURACY—This feature, although the last referred to, is after all the most important. Our Squares are all practically accurate. We do not believe that they will be found to vary in the entire length more than  $\frac{1}{1000}$  of an inch (absolute accuracy is attained only at great expense, and we could not furnish Squares that we would guarantee to be absolutely accurate for less than \$10.00 to \$15.00 each). As the majority of Squares sold in the stores are out of true from  $\frac{1}{1000}$  to  $\frac{1}{100}$ , it will be seen that our limit of  $\frac{1}{1000}$  is a very close one.

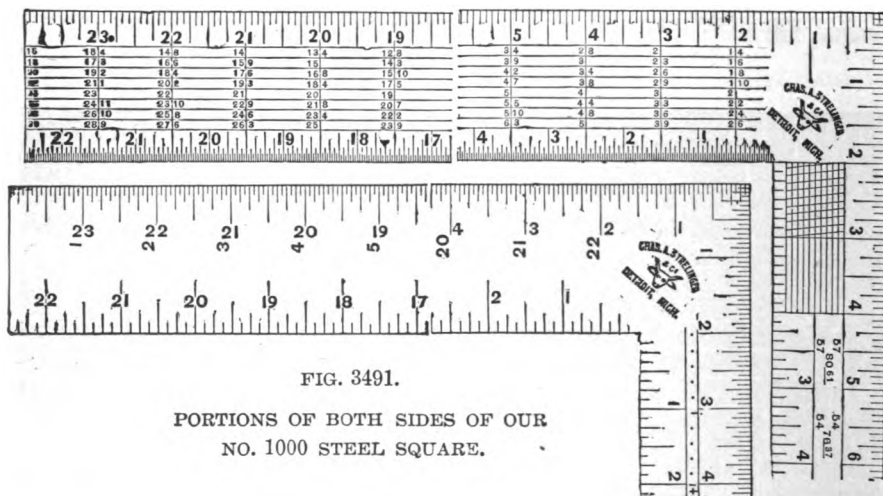


FIG. 3491.

PORTIONS OF BOTH SIDES OF OUR  
NO. 1000 STEEL SQUARE.

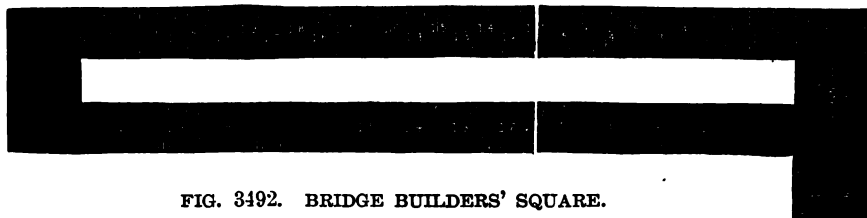


FIG. 3492. BRIDGE BUILDERS' SQUARE.

INSTRUCTIONS—In the back part of this book will be found quite complete instructions for the use of the figures and tables on steel squares.

## PRICES AND DESCRIPTIONS.

## NO. 1000 SQUARE.

The illustrations (Fig. 3491) show a sufficient portion of this Square to give a proper idea of what it is. It is graduated to 32ds, 16ths, 12ths, 10ths, 8ths, 4ths, has the  $\frac{1}{16}$ th scale, brace, 8 square, and Essex New Board Measure, giving the feet and inches in full. The blade is 2 inches wide, the tongue  $1\frac{1}{2}$  in. wide, blade 24 in. long, tongue 18 in. long (outside).

Plain Finish, \$1.50; Plain Nickel Finish, \$2.00; "Rustless" Finish, \$2.50.

## NO. 20 SQUARE.

This Square is in size similar to the No. 1000; is graduated to 16ths, 12ths, 8ths and 4ths. Has Board and Brace Measure, and 8 Square Scale.

Plain Finish, \$1.10; Plain Nickel Finish, \$1.50; "Rustless" Finish, \$2.10.

## NO. 120 SQUARE (one ft.).

This for many purposes will be found a convenient tool. It is graduated to 16ths, 12ths, 8ths and 4ths. Blade is  $1\frac{1}{2}$  in. wide, tongue 1 in. wide and 8 in. long.

Plain Finish, \$0.85; Plain Nickel Finish, \$1.20; "Rustless" Finish, \$1.75.

## BRIDGE BUILDERS' SQUARE.

This style of Square is shown in illustration (Fig. 3492). It is graduated to 16ths, 12ths and 8ths. The slot in center is 1 in. wide, width of blade 3 in., width of tongue  $1\frac{1}{2}$  in., length of tongue (outside) 18 in.

Plain Finish, \$5.75; Plain Nickel Finish, \$6.35; "Rustless" Finish, \$7.00.

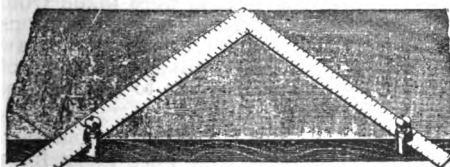
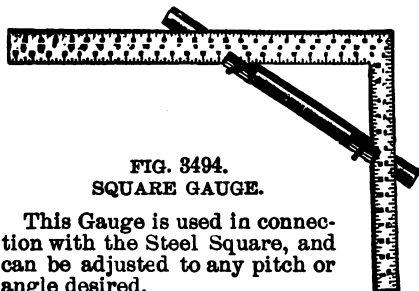


FIG. 3493.

## DEVOE'S SQUARE ATTACHMENT.

The above rather indifferent cut represents a device used in connection

with the Steel Square, by Carpenters, Stair Builders, Cabinet Makers, and Wood Workers in general. The cut shows it applied for laying out stairs. These can be conveniently used in connection with a rule or straight edge as trammel points. Price, per Set, \$0.60; postage 3 cents.

FIG. 3494.  
SQUARE GAUGE.

This Gauge is used in connection with the Steel Square, and can be adjusted to any pitch or angle desired.

For cutting in rafters, braces, stairs, etc., it will soon pay its cost, and prove a valuable tool. Is furnished either Plain or Graduated in inches, 4ths, 12ths and 24ths, ground straight and nickel plated.

Plain, 18 inch, \$1.00; 28 inch, \$1.50. Graduated, 18 inch, \$1.50; 28 in., \$2.25.

## DEPOSIT ACCOUNTS.

Many of our customers requiring tools and other goods, from time to time, find it inconvenient and annoying to have to procure Post Office or Express Money Orders, or to Register Letters, besides being quite an expense when the orders are frequent. Customers may save themselves trouble and expense by taking advantage of our DEPOSIT ACCOUNT system. Any amount (not less than \$5.00) may be deposited with us, and this amount will be placed to the account opened in the name of the customer. Orders will be executed to the extent of the amount standing to the customer's credit, and a fresh deposit may be made when the credit is exhausted. Interest at the rate of 5 per cent per annum will be allowed upon the monthly balance of such deposits.

Statement of account will be rendered when desired, and any balance remaining with us will be returned immediately, when applied for.

*Read and Ponder*

## HAND SAWS.

The Hand Saw goes through quite a number of processes in the course of manufacture. Some of these, like the shearing of plates, punching of teeth, etc., are simple details. The important and essential features consist of the following operations, which are usually proceeded with in the order named:

Tempering, Smithing or Hammering, Grinding, Polishing, Filing and Setting, Etching, Handling, Blocking.

In taking up this matter, it will be understood that what we have to say relates only to the higher grades of Hand Saws. Common and cheap saws we do not handle, and do not believe the reader of this book, our customers or ourselves, have any interest in them.

**AS TO STEEL**—In times gone by, the best Hand Saws were made from English plates, but for a number of years the American steel makers have produced saw plates, in some respects better, and in all respects equal to the best English, and very few—if any—Hand Saws are now made of imported steel.

**AS TO TEMPER**—The same amount of skill and care is required in tempering a Hand Saw properly, as for any edge tool, perhaps even more, on account of there being so much surface. The temper should be as hard as is consistent, without losing the quality of toughness. A saw that is soft and has to be filed every hour or two is a great nuisance. Our own brand of Saws (Figs. 3510 to 3513) are tempered a little harder than the average—just as hard as we dare have them tempered in order that they may be set properly without breaking the teeth.

**AS TO SMITHING AND HAMMERING**—After Tempering comes the "Smithing" or Hammering operation, for the purpose of making the plate perfectly level, condensing and toughening the steel. This operation calls for considerable skill.

**AS TO GRINDING**—This is perhaps the most important feature, as ease and rapidity in working depend more upon grinding than on any other single item. The first operations in grinding are done by automatic machinery, which

grinds the plates to an even thickness, and this is all the grinding that the cheaper grades of saws get. The better class of medium grade saws, such as are ordinarily sold at retail, at from \$1.00 to \$1.25, are ground from two to three gauges thinner on the back.

All high grade Saws are ground by hand and require expert workmen. They are not only ground four or five gauges thinner on the back than on the cut, but are also taper ground from handle to end. The sketches and descriptions on page 727 give an idea of Saws that are properly—and improperly—ground. In preparing the data for this article, the Saws were carefully measured by a Micrometer caliper especially adapted to this work, and by which we obtain measurements to one thousandth part of an inch, although the measurements indicated on sketches by figures are given in thousandths of an inch, this being considered close enough. With the exception of Fig. 3500, these measurements were taken from Saws in our possession.

Fig. 3500 shows a Saw perfect in proportion. It is ideal, but not possible to realize in common practice. If Saws ground in this way were demanded, it is likely that they could not be produced for less than \$10.00 each. In this Saw it will be noticed that at the cutting edge line "A," it is of uniform thickness. As we go back it grows thinner, and at line "D" or top part of blade, it averages about three-quarters of the thickness of cutting edge.

Taking the other direction, we find that at line "H" the Saw is considerably thicker than at line "E." It is found in practice that the taper grinding adds strength and stiffness.

Fig. 3501 shows a well ground Saw. These measurements were taken from a first-class Saw, and the proportions are no better than any high grade Saw should show. We will guarantee all of our own brand of Saws to measure up as well as this.

Fig. 3502 shows a poorly ground Saw. These measurements were taken from a "Special brand" Saw claimed to be first-class. While this Saw is somewhat thinner on the back than on the face, the grinding is very irregular, some portions of the Saw being left

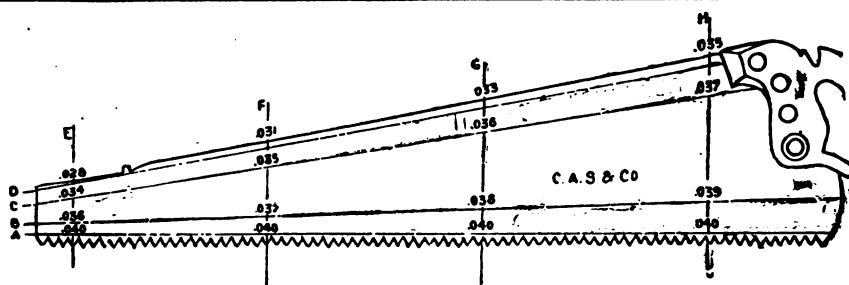


FIG. 3500. IDEAL GRINDING (Very uncommon).

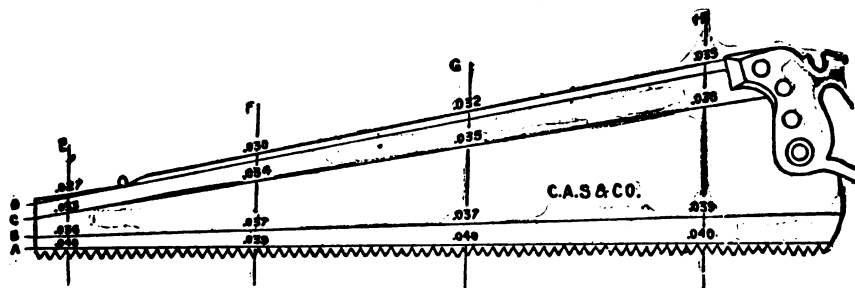


FIG. 3501. FIRST-CLASS GRINDING (No better than high-grade Saws should show).

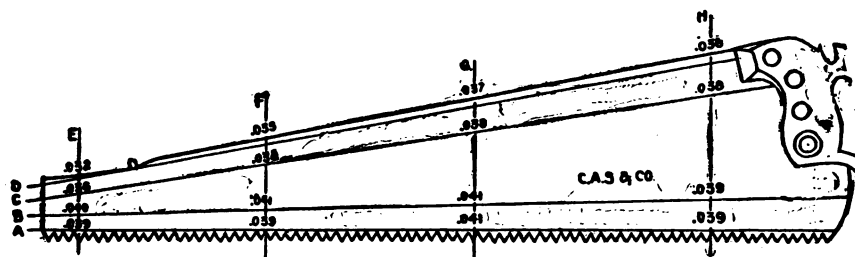


FIG. 3502. VERY POOR GRINDING (Saws ground in this way are very plentiful).

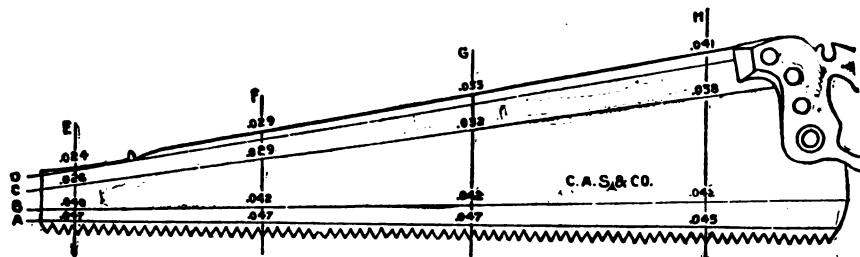


FIG. 3503. GOOD GRINDING.

The dimensions are of a Disston's No. 120 Saw. Cut shows a Straight-back, while the No. 120 is a Skew or hollow back Saw.

thicker an inch from the cutting edge. A Saw ground in this way requires two or three times as much power to run as a well ground Saw.

Fig. 3503 shows a No. 120 Disston's Saw. This is a special Saw made to run without set, and is intended to be used only in dry, clean lumber. It will be noticed that at the edge this Saw is about 20 per cent thicker than common. Among the advantages claimed are, that on account of its not having to be set, it can be made harder than it is practicable to make the regular style of Saw. It is a beautifully made and finished tool, and the only disadvantage that suggests itself to us is that it will not wear as long as the regular style of Saw, for the reason that after it is worn down an inch from the cutting edge, it loses in thickness, becoming about the same as an ordinary Saw, and as the hardness of the blade hinders it being set properly, we fear that this renders the Saw almost useless. To be sure, a Saw of this type will do a tremendous lot of work before being worn down an inch.

**AS TO POLISHING**—In former days mechanics were somewhat prejudiced against polished saw blades, but this prejudice has passed away. The higher a blade is polished, the freer and easier it will cut, and a highly polished blade is not as liable to rust as a rough one.

**AS TO FILING AND SETTING**—There are four well known styles of filing Saws. First is known as "Straight" filing; this is the commonest and cheapest way, and common and cheap saws are usually sent out filed so. The next is the "Quarter Bevel," or as it is sometimes called the "Fake Half Bevel." Then comes the regular "Half Bevel." Half bevel filing is usually found on the finer grades of Saws. The best style of filing is known as "Full Bevel." It is rather expensive, but a Saw filed this way will cut very much faster with the expenditure of much less labor, as compared with the best of other styles. It takes a skilled filer to do this work, and is more expensive, but we think it is worth all it costs.

The Setting of a Saw is also a feature of considerable importance, the point aimed at being as little set as possible for the work, and absolute *uniformity*.

The best test is to place a needle in the groove formed by the filing and setting, as shown in cut, and if the Saw is filed and set properly, this needle will slide from the butt to the point, when edge is placed at an incline, without falling off.



FIG. 3504.

We might say here that all Saws of our own brand are full bevel filed and set, and they will stand the above test.

**AS TO HANDLING**—On the shape and proper fitting of the handle depends very largely the "hang" of the Saw, and ease and convenience in working. In the two cuts we show first the



FIG. 3505. FIG. 3506. "CLOSE UP."

old style of handling (which is used with some modifications) in the Disston's Nos. 7 and 12 Saws and others in the same class. Then the "close up" style of handle, which was first used, we believe, in connection with the "skew" or "hollow back" Saws. The "close up" handle is now very generally used in the larger portion of Hand Saws sold, it being understood that this style of handle contains advantages over the other.

**AS TO SHAPE**—As regards the advantages of the skew back over the straight back Saws, there have been many discussions. When the "skew back" Saws were first brought out, many important points of advantage were claimed for them, but we believe the greatest advantage has been that with the "skew" back Saw came the "close up" handle, and many of our best mechanics prefer the straight back Saws now that they are furnished with



this style of handle. The views on this subject, however, are so diversified that it leaves us in a position where we prefer to have our customers choose for themselves.

**AS TO BLOCKING**—This is usually the last operation, and is only used in connection with the highest grade of Saws. It is the finishing touch, making the surface of the Saw straight, level and uniform.

**AS TO THICKNESS OF BLADE**—As a rule, Hand Saws are now made from the same thickness of plates (No. 18 English gauge). Naturally the larger and coarser Saws have thicker blades than the small panel Saws, but a good Saw blade should be as thin as possible consistent with the work it has to perform. A thick blade is more difficult to file, and being heavier and cutting a wider kerf, it is much more tiresome to use. It requires more set, and in our experience we find that a thick bladed Saw is more apt to break than a thin one.

#### DIFFERENT SAW MAKERS.

We find that many mechanics have a decided preference for certain makes or brands of Saws, this preference no doubt being developed by their own experience and that of their fellow workmen.

Our experience in the use and sale of Saws has perhaps been more diversified than that of any other concern in the world. We have sold and used nearly every style of Saw made by every manufacturer in this country, and the principal English makers as well, and between the leading American makes we have no preference. To illustrate—If we wanted a "skew back" Saw of the class of which the Disston D8 is the best known, we would have no hesitancy in accepting a Disston D8, Richardson R8, Peace P47, Jennings 1½, or G. H. Bishop & Co. 8.

To many of our readers the above will no doubt seem rather a peculiar position for us to take, and we may say here that there are very few lines of tools in which the products of leading makers approach one another so closely in quality.

We do not believe that the right to make the *only* first-class Saws has been

accorded—divinely or otherwise—to any one particular manufacturer, notwithstanding the fact that there are certain manufacturers who would have the Saw using public believe that such is the case.

#### COMPARATIVE LIST.

As a matter of interest we present here a comparative list of the leading styles of Saws made by the principal Saw makers in this country, also including our own brand. They are arranged in order according to price, the No. 7 Saw being the lowest priced Saw *bearing the maker's name.*

STRAIGHT BACK.						
	H. Disston & Sons.	C. A. S. & Co.	Richardson Bros.	Harvey W. Peace.	C. E. Jennings & Co.	Geo. H. Bishop & Co.
No. 7	...	...	7	35	4½	7
" 8	...	...	8	45	...	...
" 16	...	...	R8	P47	1	89
" 9	...	96	9	P68	...	...
" 12	...	100	12	60	A1	99
SKEW BACK.						
No. D8	...	...	R8	P47	1½	8
" 98	...	98	New8	P68	...	...
" 120	...	102	13	P70	A1½	90

**CAUTION**—Of late years it has been a common practice for Saw makers to make "Special Brand" Saws for wholesale and retail dealers, these Saws being marked or etched with the dealer's name. As a rule (to which there are few exceptions), these Saws are rarely of the best quality, and the main reason for the practice is to enable the dealer to sell an inferior Saw at a higher rate of profit. It will be easily understood that a Saw maker can have no great amount of interest in goods which do not bear his name, and the main reason for selling special brand saws at a lower price is, that there is virtually no responsibility attached to the maker.

Our special Saws bear our brand and trademark, *also the maker's name.*

Our Saws are made by one or other of the above manufacturers, and we happen to have in stock at the present time special Saws made by all of them.

## SAW TEETH.

As a possible means of assistance to our customers, we show in the following cuts the different grades of Saw Teeth. The degree of coarseness or fineness in Hand Saws is expressed in Points, and Saws should always be ordered in this way. The number of points in a saw is one more than the number of teeth. For example, an 8 Point saw has but 7 teeth. Please observe this in ordering.



4 POINT, RIP.



4½ POINT, RIP.



5 POINT, RIP.



5½ POINT, RIP.



6 POINT, CROSS CUT.



7 POINT, CROSS CUT.



8 POINT, CROSS CUT.



9 POINT, CROSS CUT.



10 POINT, CROSS CUT.



11 POINT, CROSS CUT.



12 POINT, CROSS CUT.

CHAS. A. STRELINGER & CO.  
SAWS.

The best Saws we sell are sent out under our own brand, and every Saw bears our trade mark, a fac-simile of which we show here, together with other inscriptions. *Each Saw also bears the maker's name.*



Our Saws are made from our own specifications, are subject to the most careful inspection and trial both at the factory and store. They are of the highest grade throughout. On account of our having to pay an extra price for hammering and blocking, grinding, filing and setting, these Saws are necessarily somewhat higher priced than the average, but when quality is considered, the price is certainly very reasonable.

It seems needless for us to say anything about a guarantee on these Saws, as all tools we sell are covered by the guarantee in front portion of catalogue.



FIG. 3510. NO. 96 HAND SAW.

This is our standard Saw and the one we sell the most of. It is made of what is known as Extra Refined London Spring Steel, has Carved and Polished Applewood Handle medium Close-up, and highly Polished Blade, is hand filed and set.

## PANEL SAWS.

Size, inch,	18	20	22	24
Each,	\$1.20	\$1.33	\$1.40	\$1.57

Above sizes are carried in stock with 8, 9, 10, 11 and 12 points to the inch.

## HAND SAWS.

Size, inch,	26	28	30
Each,	\$1.65	\$1.87	\$2.25

The 26 inch Saws are the most commonly used. We carry these in stock 6, 7, 8, 9, 10 and 12 points to the inch.

The 28 and 30 inch Saws are used for heavy, rough work, and are carried in stock with 6, 7 and 8 points to the inch.

## RIP SAWS.

Size, inch,	22	26	28
Each,	\$1.40	\$1.65	\$1.87

The 22 inch small Rip or Splitting Saw will be found an exceedingly useful tool for light work. We have these with 6 and 7 points to the inch.

In former days we used to sell about ten 28 inch Rip Saws to one 26 inch, but this order of things has been almost reversed, and now the 26 inch Saws are sold at about the rate of four to one of the other. We carry in stock the 26 inch Rip Saw with 5, 5½, 6 and 7 points to the inch. The 28 inch with 4½, 5, 5½ and 6 points to the inch.



FIG. 3511. NO. 98 HAND SAW.

This is our leading Skew Back Saw. It is what is known as Full Skew Back has Close-up Polished Applewood Handle, 5 Improved Screws, Polished Edge, and is in all other respects the same as our No. 96 Saw (Fig. 3510).

Prices are the same as the No. 96. Sizes are also the same excepting that in the No. 98 we do not carry the 18 inch Panel, 30 inch Hand or 22 inch Rip Saws.

## PANEL SAWS.

Size, inch,	20	22	24
Each,	\$1.33	\$1.40	\$1.57

Above sizes are carried in stock with 8, 9, 10, 11 and 12 points to the inch.

## HAND SAWS.

Size, inch,	26	28
Each,	\$1.65	\$1.87

The 26 inch Saws are the most commonly used. We carry these in stock 6, 7, 8, 9, 10 and 12 points to the inch.

The 28 inch Saws are used for heavy work, and are carried in stock with 6, 7 and 8 points to the inch.

## RIP SAWS.

Size, inch,	26	28
Each,	\$1.65	\$1.87



FIG. 3512. NO. 100 HAND SAW.

The Nos. 100 and 102 are our finest Saws; they are what might be termed "Fancy" Saws, the plates being selected and the finish throughout extra fine, in fact we think they are the handsomest Saws in the market.

As regards quality of steel, temper and all essential working points, they are no better than our Nos. 96 and 98, for the simple reason that the Nos. 96 and 98 are about as good Saws as can be made. They are just intended for those mechanics who want something extra nice and are willing to pay for it.

## PANEL SAWS.

Size, inch,	20	22	24
Each,	\$1.75	\$1.90	\$2.10

The above sizes are carried in stock, with 9, 10, 11 and 12 points to the inch.

## HAND SAWS.

Size, inch,	26	28
Each,	\$2.20	\$2.50

The 26 inch Saws are most commonly used, are carried in stock with 7, 8, 9, 10 and 12 points to the inch; 28 inch Saws with 7, 8 and 9 points to the inch.

## RIP SAWS

Size, inch,	26	28
Each,	\$2.20	\$2.50

26 inch Rip Saws with 5, 5½, 6 and 7 points to the inch; 28 inch with 4½, 5, 5½ and 6 points to the inch.



FIG. 3513. NO. 102 HAND SAW.

This is a Skew Back Saw of the same quality and finish as the No. 100. Sizes and prices are the same as the No. 100.

*When in doubt - take a C. A. S. Saw*

## DISSTON'S SAWS.

We carry in stock two or three styles of Disston Saws. It is superfluous for us to say here that Henry Disston & Sons make good Saws. There is probably no land or country where the Disston Saws are not known.



FIG. 3516. NO. 7 DISSTON SAWS.

The Disston No. 7 Saw is perhaps better known than any saw now made. It is, we believe, the lowest priced saw the Disston Co. make under their own brand. This Saw has Beech Handle, Polished Edge, and Grained Blade.

## PANEL SAWS.

Size, inch,	20	22
Each,	\$1.00	\$1.13

The above sizes are carried in stock with 9, 10 and 11 points to the inch.

## HAND SAWS.

Size, inch,	26	28
Each,	\$1.25	\$1.48

The above sizes are carried in stock with 6, 7, 8, 9 and 10 points to the inch.

## RIP SAWS,

Size, inch,	26	28
Each,	\$1.25	\$1.48

These Saws are carried in stock with 4½, 5 and 5½ points to the inch.

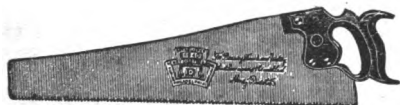


FIG. 3517. NO. D8 DISSTON SAW.

This is the leading Skew Back Saw of Disston's make; has Applewood Handle, Polished Edge, and 5 Improved Screws.

## PANEL SAWS.

Size, inch,	20	22	24
Each,	\$1.22	\$1.37	\$1.46

The above sizes are carried in stock with 8, 9, 10, 11 and 12 points to the inch.

## HAND SAWS.

Size, inch,	26	28
Each,	\$1.53	\$1.74

The 26 inch Saws are the most commonly used, are carried in stock with 7, 8, 9, 10, 11 and 12 points to the inch; 28 inch Saws with 7, 8 and 9 points to the inch.

## RIP SAWS.

Size, inch,	26	28
Each,	\$1.53	\$1.74

Rip Saws with 4½, 5, 5½ and 6 points to the inch.

## DISSTON'S ACME NO. 120.

(Not illustrated.)

The manufacturers say, "This Saw is designed only for first-class workmen." It is intended to be used only in dry, thoroughly seasoned lumber, and is run without set. The 6, 7 and 8 point Saws take the place of 10, 11 and 12 point of the ordinary styles.

## PANEL SAWS.

Size, inch,	20	22	24
Each,	\$1.90	\$2.13	\$2.28

## HAND SAWS.

Size, inch,	26	28
Each,	\$2.35	\$2.70

## MEDIUM QUALITY SAWS.

We were going to head this article "Second Class" Saws, but when we pause to consider how much better these Saws are than many of those sold as first-class, we refrain. The two styles shown here are made of a good quality steel, are ground about two gauges thinner on the back, and are good value at the price.

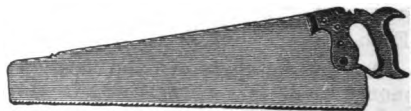


FIG. 3518. BROWNELL.

This Saw is full width blade, Beech Handle, 4 Improved Screws. The 18 and 22 inch are Panel Saws, the 26 inch either Hand or Rip.

Size, inch,	18	22	26
Each,	\$0.75	\$0.85	\$0.95



FIG. 3519. KERSHAW.

This is a Skew Back Saw of same quality as the Brownell; it comes in the same sizes and at the same prices.

### BACK SAWS.

Our Back Saws are of the best quality obtainable. As the Back Saw is an important tool, we do not think it wise to carry in stock medium or cheaper grades. These Saws bear our trademark together with the maker's name.

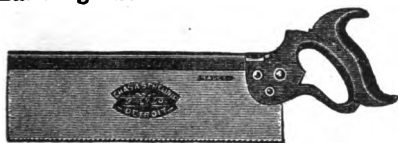


FIG. 3520. NO. 8 BACK SAW.

These Saws have Applewood Handles, Polished Edge and Glued Back, and are handsomely finished throughout.

Size, in.,	8	10	12	14	16
Each,	\$0.93	\$0.98	\$1.12	\$1.25	\$1.40

### MITER BOX BACK SAWS.

These Saws are the same in quality and style as the No. 8.

#### 4 Inches under Back.

Size, inch,	20	24	28
Each,	\$1.80	\$2.10	\$2.40

#### 5 Inches under Back

Size, inch,	24	28	30
Each,	\$2.50	\$2.90	\$3.15

#### 6 Inches under Back.

Size, inch,	24	28	30
Each,	\$2.80	\$3.35	\$3.75

### SAW HANDLES AND SCREWS.

We carry in stock Handles for all the styles of Saws shown in catalogue, also an assortment of Screws. Handles range in price from 15 to 50 cts.; Screws from 5 to 10 cts.

### COMPASS AND KEY HOLE SAWS.

The Compass Saw is what might be termed a "General Utility" tool. It is used in turn to cross-cut, miter and rip, and as a rule it is the most thoroughly abused and maltreated tool in the carpenter's kit. The Compass Saw should be of the very best quality, but as a matter of fact the majority of Compass Saws sold are cheap, miserable affairs, and the larger proportion of this style of Saws found in the stores are sold at wholesale, at from 10 to 13 cents each.



FIG. 3521. COMPASS SAW.

We sell but one grade of Compass Saw, that is the best. These Saws have quite heavy blades, are thick on the tooth, and ground very thin at the back, have strong Applewood Handles, and are hand filed and set.

Size, inch,	10	12	14	16
Each,	\$0.33	\$0.37	\$0.40	\$0.43



FIG. 3522.

### THROPP'S KEY HOLE SAW AND PAD.

This is intended to take the place of the cheap iron Pad Saws so commonly sold. While higher in price, it is well worth the difference, as, besides being of better quality throughout, it has a number of convenient features, which the ordinary Saws do not possess.

Price, each, \$0.25. Handles only, \$0.17; Blades only, \$0.12; Pull Stroke Blades (see Fig. 3525), \$0.12.



FIG. 3523. WOODEN SAW PAD.

While the Wooden Saw Pad is looked upon as being rather an old-fashioned tool, it has many points of advantage over the regular Compass or Key Hole Saw. For certain kinds of work it is very convenient. We have these in English beech and rosewood. Length over all 8 in. Price, Beech, \$0.55; Rosewood, \$0.70.

FIG. 3524. PAD SAW BLADE.

These Blades are made especially for us, and we do not believe they can be procured elsewhere. They are lighter than the regular Compass blade, and heavier than the Key Hole blade, are of the best quality, well finished, filed and set, concave ground with very thin backs. Length from 9 to 13 inches.

Price, per Doz., \$2.20; Each, \$0.20.

FIG. 3525. PULL STROKE BLADE.

In some cases it is desirable that a Compass or Key Hole Saw should have the teeth of a form that permits the cutting to be done on the pull stroke, in fact many of our best mechanics file their key hole blades in this way. We carry these blades in stock, and sell a great many of them. They are same style as the blades (Fig. 3524) and sell at the same prices. We also have these blades for Fig. 3522.

Mr. Fred. T. Hodgson, in his excellent book entitled "Hand Saws, Their Use, Care and Abuse" claims that a saw of this form will last longer, and do work better and easier. He says also, "It seems very strange that manufacturers and users do not recognize this principle."

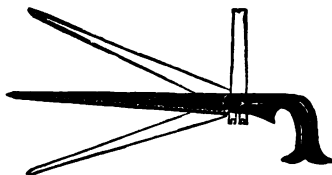


FIG. 3526.

#### PATENT ADJUSTABLE COMPASS SAW.

The Patent Adjustable and Interchangeable Compass Saw shown here is a new tool and a good one. The blade can be held firmly in any angle or position. This Saw has Carved Applewood Handle. The blades are of the highest quality and temper, and handsomely finished.

Size, inch,	10	12	14	16
Each,	\$0.43	\$0.45	\$0.48	\$0.53
Extra Blades,	.21	.23	.25	.27



FIG. 3527. NEST OF SAWS.

These Saws operate on the same principle as the Fig. 3526, Patent Adjustable and Interchangeable Saw. The set comprises a Pruning or Table Saw, Compass Saw and Key Hole Saw

Price, per Set, \$1.10.



FIG. 3528. DOVE TAIL SAW.

These Saws are extra quality spring steel, and are intended for fine dovetailing and musical instrument work. The blades are very thin (24 gauge), and they have 9 teeth to the inch.

Size, inch,	4	6
Each,	\$0.67	\$0.84

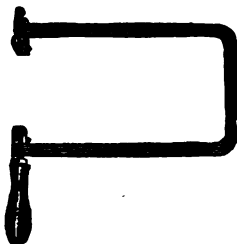


FIG. 3529. STAIRBUILDER'S SAW.

Applewood Frame, Polished Edges, price, each, \$0.50.

FIG. 3530.

#### BRACKET SAW FRAME.



This is a steel frame with wood handle, about 12 in. under back. Price, Each, \$0.50.

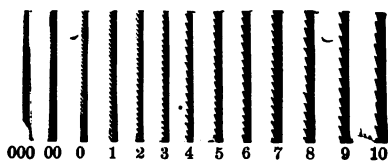


FIG. 3531. BRACKET SAW BLADES.

Our Bracket Saw Blades are of the best quality. Sizes from Nos. 0 to 6, per Doz., \$0.08; per Gross, \$0.80. Nos. 7 to 10, per Doz., \$0.11; per Gross, \$1.10.

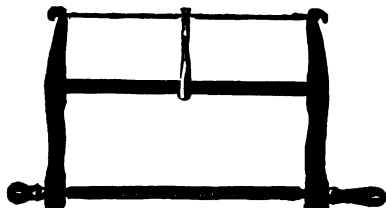


FIG. 3532. TURNING SAW.

Sizes given are length of blade, and prices are for frames only. For Blades see Fig. 3533.

Size, inch,	16	20	24
Each,	\$1.10	\$1.30	\$1.45



FIG. 3533. TURNING WEBS.

Length.	Each.	Dozen.	Gauge.	Width.
8 in.	\$0.11	\$1.17	22	$\frac{1}{8}$ & $\frac{1}{4}$
10 "	.12	1.22	22	$\frac{1}{8}$ & $\frac{1}{4}$
12 "	.13	1.30	21	$\frac{1}{8}$ & $\frac{1}{4}$
14 "	.15	1.44	21	$\frac{1}{8}$ & $\frac{1}{4}$
16 "	.17	1.62	20	$\frac{1}{4}$ & $\frac{1}{2}$

## FELLOE WEBS.

Felloe Webs are heavier than Turning Webs, and ground thin on the back.

Length.	Each.	Dozen.	Gauge.	Width.
8 in.	\$0.13	\$1.30	19	$\frac{1}{8}$ , $\frac{1}{4}$ & $\frac{1}{2}$
10 "	.14	1.44	18	$\frac{1}{8}$ , $\frac{1}{4}$ & $\frac{1}{2}$
12 "	.17	1.67	18	$\frac{1}{4}$ , $\frac{1}{2}$ & $\frac{3}{4}$
14 "	.19	1.90	17	$\frac{1}{4}$ , $\frac{1}{2}$ & $\frac{3}{4}$
16 "	.21	2.12	17	$\frac{1}{4}$ , $\frac{1}{2}$ & $\frac{3}{4}$
18 "	.25	2.43	17	$\frac{1}{4}$ , $\frac{1}{2}$ & $\frac{3}{4}$
20 "	.28	2.70	17	$\frac{1}{4}$ , $\frac{1}{2}$ & $\frac{3}{4}$
24 "	.33	3.30	17	$\frac{1}{4}$ , $\frac{1}{2}$ & $\frac{3}{4}$

Felloe Webs  $\frac{1}{4}$  and  $\frac{1}{2}$  are made with wide ends in order to give strength at the hole. For prices add 25 per cent to the above. Other widths, sizes and styles can be furnished to order.

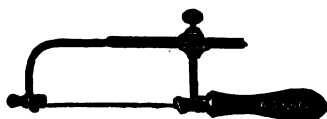


FIG. 3534. COPING SAW.

This is quite similar in style to the regular Jeweler's Saw Frame. For fine finishing work it is quite an essential tool.

No. 15, 2 in. under back, \$0.55; No. 20, 6 in. under back, \$0.80. Special 5 in. Coping Blades, per Doz., \$0.15.

## HACK SAWS.

The Hack Saw has become an almost indispensable tool for the worker in either wood or iron.

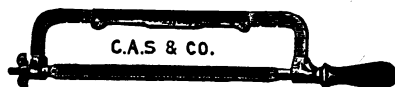


FIG. 3535.

## ADJUSTABLE HACK SAW FRAME.

Holds blades from 8 to 12 inches long and is, we believe, the best Adjustable Hack Saw Frame made. We have always sold more of this style than any other. For ourselves we must frankly confess that we have never been able to appreciate the utility of an adjustable frame. Perhaps once in a hundred times it may be an advantage, but an adjustable frame cannot be made as rigid as a solid one, and it is a tool that needs to be rigid, and strong. Polished and Nickel Plated. Price, \$1.00.

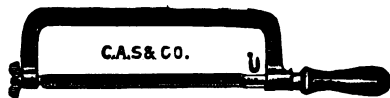


FIG. 3536. NO. 2 HACK SAW FRAME.

This is a solid frame to hold 8 inch blades, facing them in any direction. Is Polished and Plated, Cocobola Handle. Price, \$0.70.

No. 3 Hack Saw Frame, \$0.45. This is made of Malleable Iron, Nickel Plated and nicely finished; a good, strong, substantial tool.

## HACK SAW BLADES.

We carry in stock several brands of Hack Saw Blades, the best known being

the Star brand. The regular saws have 14 teeth to the inch; the fine tooth blades (used for cutting tubing and thin metals) 23 teeth to the inch.

Size,	6	7	8
Each,	\$0.07	\$0.07	\$0.07
Dozen,	.50	.55	.58
Size,	9	10	12
Each,	\$0.08	\$0.09	\$0.12
Dozen,	.63	.77	.95

NOTE.—For Hack Sawing Machines and Metal Saws of various kinds, see our Metal Workers' catalogue, entitled "A Book of Tools" (described on page 744 of this catalogue).

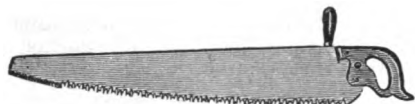


FIG. 3538. ONE-MAN CROSS-CUT SAW.

These we carry in stock with Champion tooth as shown in cut, or with Plain tooth. Prices are alike. Can furnish shorter and longer sizes to order.

Size, ft.,	4	4½	5
Each,	\$2.00	\$2.25	\$2.50

#### REGULAR CROSS-CUT SAWS.

We carry in stock a very complete line of Cross-Cut Saws, with different styles of teeth, in lengths of from 4 to 7 ft. Prices upon application.

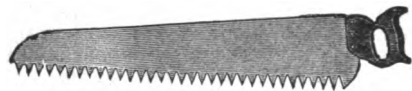


FIG. 3539. WAGON ICE SAW.

Size, in.,	26	28	30
Each,	\$1.33	\$1.50	\$1.65



FIG. 3540. POND ICE SAW.

Tapered, 7 inch butt, 5 inch point, No. 10 gauge, set and sharpened; price, complete, \$0.90 per ft. Common lengths are 4, 4½ and 5 ft.

WHEN ORDERING please do not fail to give the Figure Number and Size wanted. Long delays are not infrequent when the proper sizes and kinds are not specified—this is important.

## SAW SETS.

When the fever of invention attacks a mechanic, if he is a machinist or engineer his attention is turned toward the improvement of Wrenches; if a carpenter or wood worker, he thinks what the world needs is a better Saw Set than it happens to possess at that particular time. In our experience of about thirty years, we have seen—in embryo and full fledged—not less than 200 styles of Saw Sets. We have handled and sold at least fifty different kinds. A few of these were good, many of them indifferent, and more were of so little account that we hope we may be forgiven for having sold them.

We are constrained to believe that no other concern in the world has had quite as much experience in the line of Saw Sets as ours. In our earlier experience we sold more of the style of sets known as Hammer Saw Sets.

About fifteen years ago the Morrill Saw Set was brought out, and met with great favor. It was a radical departure from any of the styles then in use, and had a number of good features. We presume that since the Morrill Saw Sets were placed upon the market, there have been more of them sold than of all other kinds put together and we understand that Mr. Chas. Morrill has made a handsome fortune out of the manufacture and sale of this Saw Set.

There are four types of Sets for Hand Saws. The first is the Plate Set, which consists of a steel plate or bar with notches cut in it, the tooth being inserted in a notch suiting its thickness and bent over. This is the oldest style, and is but little used; we do not sell them. The second is the Hammer Saw Set. One of the oldest and best known styles of this type is the Aiken (Fig. 3541). Others are the Bemis & Call, Roth, Barton, Eclipse, Smith, etc. The third is the Hand Lever type, worked like a pair of plyers, and in the use of which the tooth is bent and "squeezed" or compressed into position; the best known of this type are the Morrill and Taintor. Others are the Leach, Nash, Keeler, Monarch, etc. The fourth is the Spring Lever although this can hardly be called a distinct type, as it is perhaps more of a Hammer Saw Set than anything.



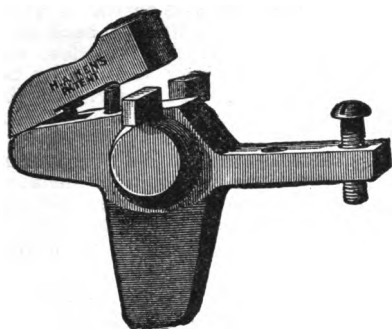


FIG. 3541. AIKEN SAW SET.

This is one of the oldest styles of Hammer Saw Sets, and is, we believe, one of the best—if not the best. There are imitations made, but the genuine is now very cheap, and is superior. Price each, \$0.65; postage, 10 cts.

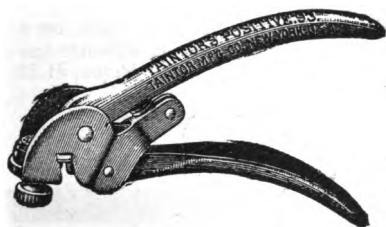
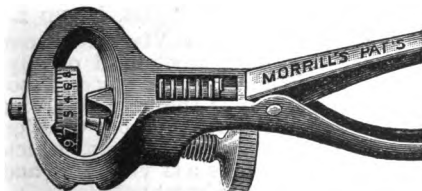


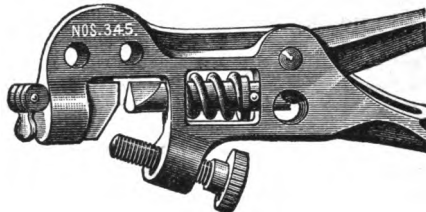
FIG. 3542. TAINTOR SAW SET.

The Taintor Saw Set is one of the latest styles, and we think it is the best of the Hand Lever Saw Sets. In the short time that they have been on the market, there have been thousands of them sold, and we have not known of a single case of dissatisfaction. Price, each, \$0.70; postage, \$0.10.

FIG. 3543.  
MORRILL'S SAW SET NO. 95.

This is the latest and best form of the Morrill Perfect Saw Set. The revolving anvil with indicator subdivided and

marked with figures, the figures showing the number of teeth to the inch in the saw to be set; for example, if the saw has four teeth to the inch, turn the anvil until the figure 4 comes up directly in front of the plunger, and so on. Price, \$1.00; postage, 12 cts.

FIG. 3544. MORRILL SAW SET.  
STYLE OF NOS. 3, 4 AND 5.

No. 3 for Cross Cut and Circular Saws from 14 to 20 gauge. Price, each, \$1.25. No. 4 for Cross Cut Saws with either M or Champion teeth from 14 to 20 gauge. Price, \$1.25.

No. 5—This is the heaviest Set of this kind made; used for Timber and Board Saws from 6 to 14 gauge. Price, \$2.00.



FIG. 3545. SAW SWAGE OR UPSET.

No. 3, \$1.80, for small Circular and Band Saws; No. 2, \$2.25, for small and medium Circular and Mill Saws; No. 1, \$2.70, for large Circular Saws.

FIG. 3545a.  
SAW JOINTER.

An excellent little tool for Hand Saws of all kinds.

With Special File, \$0.30; postage 5 cts.

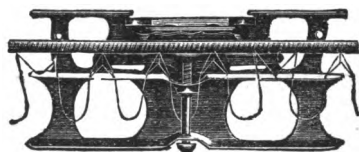


FIG. 3546. EXCELSIOR SAW TOOLS.

Comprising a combined Jointer, Rake Tooth Gauge, Side File, Setting Block and Set Gauge. Packed in box with full instructions, price, per set, \$0.70, postage 25 cents.

## SAW SETTING.

The principle of correct Saw Setting is to have every tooth set alike. A saw should be set just enough to clear nicely; any more than this is unnecessary, as it makes harder work and wears out the saw faster.

Notice how a high grade, first-class saw is set as it comes from the factory; every tooth seems to be set absolutely alike, and not too wide. Do you know how saws are set at the factory? With a hammer on a small anvil or stake. There has never been a better way, and doubtless never will be, but these men at the factory are experts; they do practically nothing else. They use just such a hammer, strike just such a blow every time, and the breaking of a tooth is of very rare occurrence, no matter how hard the saw may be. The old style Hammer Saw Sets, like the Aiken (Fig. 3541) and others of this type, aim at the same results as are obtained by setting with a hammer, and to a certain extent are successful. The disadvantage of this style of Set is that mechanics will use all sizes of hammers, and to any one but an expert it is difficult to regulate the weight of blow.

handle. Can be used on the heaviest hand saws, and on jig and band saws from  $\frac{1}{4}$  wide upwards. All those who have used the Spring Lever Saw Set acknowledge its superiority, and this new Set is three times as valuable as the other. This is the only style of Set that will strike a blow with equal strength all the time; can be instantly adjusted to give six different weights of blows, from that of a 3 oz. hammer to that of a 2 lb., and can be worked very rapidly. Price, \$1.75.

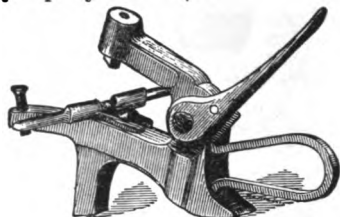


FIG. 3548. SPRING LEVER SAW SET.

These Sets have been used for over twenty-five years; thousands are in use, and never a complaint. Price, \$1.10.

## SAW VISES.

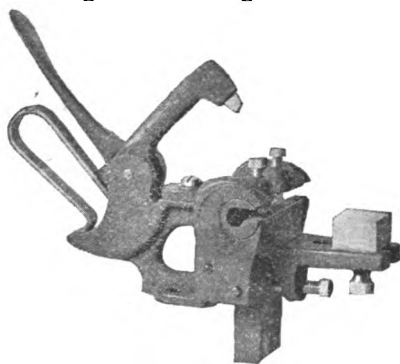


FIG. 3547.

## SPRING LEVER SAW SET—IMPROVED.

This is a new design which we have just brought out. It possesses all of the advantages of the old style shown in Fig. 3548, together with many new features. The arrangement for holding saw and adjusting for various degrees of set is a great improvement. It is the only set of this type that will set a saw when it is worn down close to the

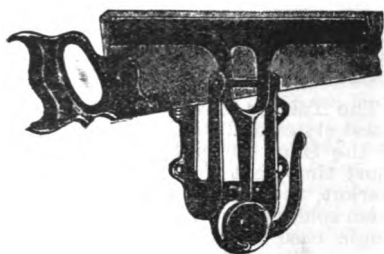


FIG. 548. STYLE OF NOS. 1 AND 2.

The Wentworth Saw Vises are, in our judgment, a long way ahead of anything yet produced in the way of a tool of this class. It is the only Saw Vise made with a Flexible Rubber Cushion or Muffler between the jaws, which effectually prevents all vibration, and renders saw filing almost noiseless.

The jaws are planed slightly concave, securing an equal bearing the entire length, and are made to open and close by simply turning the Cam Lever. They are strong, well proportioned and

Best of All.

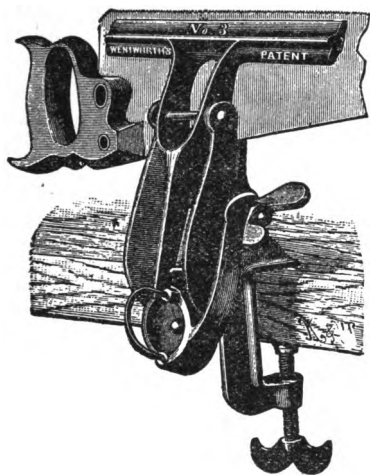


FIG. 3549. STYLE OF NO. 3.

handsomely finished. Nos. 1 and 2 Vises can be easily screwed to a work bench or any place desired. No. 3 Vise has a malleable iron screw clamp for attaching it to a work bench, and by turning a thumb nut it can be tilted to any desired angle, and it can be easily detached and carried about from place to place.

No. 1, \$1.00.....	Jaws 11 in. wide.
" 2, 1.40.....	" 15 " "
" 3, 1.40.....	" 11 " "

FIG. 3550. NO. 0 SAW VISE.  
Price, \$0.50.

This Vise has 9½ in. jaws, and is the best of its class. It isn't a very high class, however, and at the present low price of the Wentworth Vises, it hardly pays to buy this, unless there is some special reason.

## SAW FILE GUIDES.

There is no tool used that is in nearly every case in such bad condition and so little fit to do its work properly as the saw is, and all for the want of an easy and sure means to keep it in good order, so as to do its work well, in the least time, with the least expenditure of bodily labor or power. A saw in good and proper order will do more and better work in one hour than a bad one will in three hours.

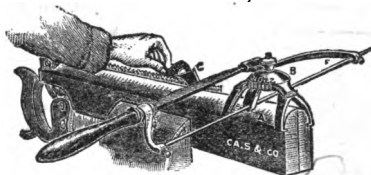


FIG. 3551. ROTH'S SAW FILE GUIDE.

The above cut represents Roth's Late Improved Saw Filer, perfected after fifteen years' of careful study and experimenting with saw filing machinery, and the result is a practical Filer for accurately filing the various kinds of Saws used by mechanics and others. It is a model of simplicity, has the merit of cheapness combined with durability, its possession being within the means of all, and its use is economy to all using a saw.

Fred. T. Hodgson in his excellent work, "Hand Saws, Their Use, Care & Abuse," says, "The whole art of how to file a saw is combined in this Filer and the table connected with it."

Roth's Guide, suitable for all Carpenters' Saws, \$1.60; postage, 25 cts.

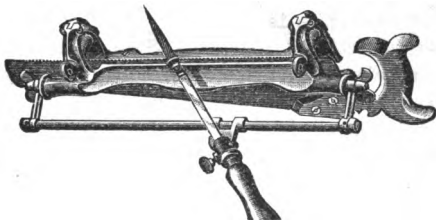


FIG. 3552. ELKIN'S SAW FILER.

This is a combination of Clamps and Adjustable Guides used for filing Saws. It is a somewhat more elaborate tool than the Roth's Saw File Guide, and is very well liked.

Price, \$2.40.



# *A Book of Tools.*

550 PAGES. 2000 ILLUSTRATIONS.

"A Book of Tools," bound in soft Canvas Cover, sent to any address upon receipt of 25 cents in stamps; or printed on heavier paper, with handsome Cloth Cover, 75 cents.

*In ordering this Book kindly address letters to Department "A."*

WE have reserved these two pages in order to make some little mention of our Metal Workers' Catalogue, which treats of . . .

## **TOOLS, MACHINERY, AND SUPPLIES.**

used by Machinists, Engineers, Blacksmiths, Model Makers, Founders, Moulders, Inventors and Amateurs, in Manufactories, Mills, Mines, etc., etc. If we may be pardoned the conceit, the highest compliment we can pay "A BOOK OF TOOLS" is to state that it is as complete in the lines represented as is this catalogue.

In going through "A Book of Tools" the first line is Calipers, followed by Gauges, Speed Indicators, Steel Rules, Wrenches, Pliers, Shears, Files, and Hammers; then come the Blacksmiths' Tools, Anvils and Tools, Upsetters, Forges and Blowers; after these, Drills, Chucks, Drilling Machines, Milling Cutters, Reamers, Taps and Dies, Vises, Dogs, Clamps and Jack Screws;

These are followed by Pipe Fitters' Tools of all kinds, Punching Presses and Punches, Lathes from the small Jewelers' to the ponderous Engine Lathe, weighing many tons, Screw

Machines, Lathe Tools, Shapers and Planers, Gear Cutting and Milling Machinery, Emery Wheels and Grinders, Grind Stones, etc., etc.;

Then come Nickel Plating Supplies of all kinds, Chemicals, Lacquers, etc., Moulders' Tools and Supplies, Oilers, Valves, Cocks, Steam Whistles, Injectors, etc., etc.;

After this is the line of Engines and Boilers, together with Appliances and Tools, Governors, Indicators, Water Motors, Tube Cutters and Expanders, Steam Pumps, etc., etc.,

Following these, an uncommonly complete line of Hangers, Shafting, Pulleys, Clutches, Couplings, Gears, Link Belt, Chain, Leather and Rubber Belting, Packing and Hose, Factory Supplies, Wheelbarrows, Scales, etc.;

The next line is Gas Furnaces and Burners, Gasoline Fire Pots, Torches and Lamps, Chain and Rope Hoists, Winches, Cranes, and Carrying Track, Wire Working Machinery. Drop Forgings, etc., etc.;

Followed by Brass, Copper, Bronze, Aluminum in Wire, in Sheet, Wire Rods and Tubing, Steel Wire and Rods, Spring, Keys and Cotters, Babbit Metal, Solder, Tin, Zinc, and Spelter;

After this are miscellaneous Supplies, Set and Cap Screws, Thumb Screws, Nuts, Machine Bolts, Patch Bolts, Turn Buckles, Rivets, Nails and Screws.

The remainder of book contains cuts and descriptions of Special Machinery and Supplies of all kinds, and is in some ways the most interesting part of the book.

Taken altogether, it will be found a

most complete and comprehensive Encyclopedia of Tools, Machinery and Supplies for Metal Workers.

The price charged (25 cents) is merely nominal, as these books cost us more than this amount. "A BOOK OF TOOLS" is issued for the purpose of securing trade for us in the lines represented, and up to the present time it has been very successful in this direction.



Micrometer Caliper.



Ball Pein Hammer.



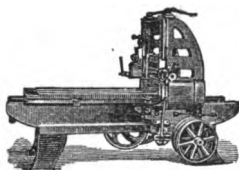
Forge.



Machinist's Vise.



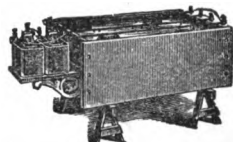
Screw Cutting Lathe.



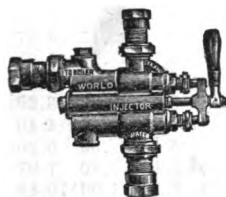
Iron Planer.



Foot Wheel.



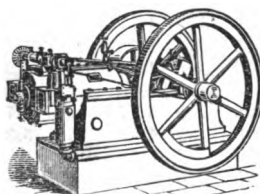
Plating Apparatus.



Injector.



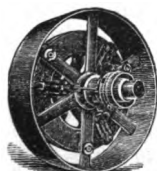
Upright Engine and Boiler.



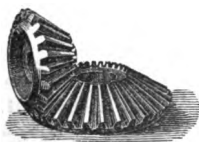
Gas Engine.



Post Hanger.



Clutch Pulley.



Bevel Gear.



Gasoline Fire Pot.



Steel Spring

## FILES.

We have handled the Nicholson make of Files for nearly twenty years, and have in the meantime bought and sold (in greater or less quantities) files made by six or eight other leading manufacturers. Some of our customers don't like them—wouldn't have them—but there is no tool made about which ideas and opinions vary so greatly, as a file; there isn't a file-

maker on earth whose product suits every one, but we think the Nicholson files satisfy a larger portion of consumers than any other file made in this country.

They are, in point of uniformity, finish and all qualities that go to make up a good file, a superior article. Although higher in price, there are more Nicholson Files sold than of any other make. This fact speaks for itself.



FIG. 253.

## MILL AND ROUND.

	BASTARD.		2ND CUT.		
Inch.	Each.	Dozen.	Each.	Dozen.	
3					We keep
3½	\$0.08	.81	.10	.98	Dead
4					Smooth
5	.09	.90	.11	1.08	files in Flat,
6	.10	1.02	.12	1.20	Hand, and
8	.13	1.31	.16	1.53	Half Round.
10	.17	1.71	.20	1.98	Prices are
12	.25	2.43	.28	2.79	double the
14	35	3.51	.40	4.00	price of
16	50	4.95	.57	5.63	Bastard.
18	.68	6.80			

## HAND, WARDING AND PILLAR.

Inch.	BASTARD.		2ND CUT.		SMOOTH.	
	Each.	Dozen.	Each.	Dozen.	Each.	Dozen.
3						
3½						
4						
5						
6	.12	1.13	.14	1.35	.15	1.49
8	.13	1.26	.15	1.49	.17	1.65
10	.17	1.67	.20	1.97	.22	2.15
12	.24	2.34	.27	2.70	.30	2.96
14	.34	3.38	.39	3.87	.42	4.23
16	.47	4.73	.54	5.40	.59	5.85
18	.65	6.44	.73	7.29	.79	7.88
18	.87	8.64	.97	9.68	1.04	10.35

## FLAT AND SQUARE.

Inch.	BASTARD.		2ND CUT.		SMOOTH.	
	Each.	Dozen.	Each.	Dozen.	Each.	Dozen.
3						
3½						
4						
5						
6	.10	.99	.12	1.17	.13	1.30
8	.12	1.13	.14	1.33	.15	1.47
10	.16	1.53	.18	1.80	.20	1.96
12	.21	2.12	.25	2.46	.27	2.66
14	.30	3.02	.35	3.47	.38	3.78
16	.43	4.28	.49	4.90	.53	5.31
18	.59	5.90	.67	6.69		
18	.80	7.95	.89	8.90		

## HALF-ROUND.

Inch.	BASTARD.		2ND CUT.		SMOOTH.	
	Each.	Dozen.	Each.	Dozen.	Each.	Dozen.
3						
3½						
4						
5						
6	.13	1.26	.15	1.51	.17	1.67
8	.15	1.44	.17	1.71	.19	1.88
10	.20	1.94	.23	2.25	.25	2.48
12	.26	2.61	.31	3.04	.33	3.29
14	.35	3.51	.41	4.05	.44	4.40
16	.48	4.77	.55	5.45	.59	5.90
18	.65	6.53	.75	7.43	.80	7.97
18	.88	8.82	.99	9.90	1.06	10.58

SLIM  
TAPER. BLUNT.

Inch.	SINGLE CUT.		SINGLE CUT.		SINGLE CUT.	
	Each.	Dozen.	Each.	Dozen.	Each.	Dozen.
3						
3½						
4						
4½						
5	.06	.54	.06	.59		
6	.07	.63	.07	.66	\$0.11	\$1.04
8	.08	.77	.08	.77	.12	1.13
10	.11	1.08	.10	.95	.15	1.44
12	.17	1.71	.14	1.35	.20	1.94
18	.26	2.57	.21	2.03	.26	2.61

## KNIFE. BANDSAW BLUNT.

Inch.	BASTARD.		HEAVY DOUBLE CUT.		LIGHT DOUBLE CUT.	
	Each.	Dozen.	Each.	Dozen.	Each.	Dozen.
3						
3½						
4						
4½						
5	.13	1.26	\$0.09	\$0.90	\$0.10	\$0.95
6	.13	1.26	.11	1.08	.11	1.08
8	.15	1.44	.15	1.47	.13	1.29
10	.20	1.94	.23	2.24	.17	1.67

**WOOD RASPS AND FILES**

Wood Rasps, Fig. 255, we sell in half round shape, they are quite coarsely cut.

Length, 6 in.	8 in.	10 in.	12 in.	14 in.
Each, \$0.17	.25	.35	.50	.70
Doz., 1.70	2.40	3.50	4.90	6.75

Cabinet Rasps are half oval, and cut considerably finer than the Wood Rasps.

Length, 6 in.	8 in.	10 in.	12 in.	14 in.
Each, \$0.25	.35	.45	.60	.80
Doz., 2.40	3.30	4.50	6.00	7.85

Cabinet Files are of the same shape as Cabinet Rasps, the cut is perhaps a little coarser than a Bastard File of the same length, they take the same prices as Wood Rasps in opposite column.

Horse Rasps, Fig. 256, we sell only in the Heller Bro.'s Brand, this firm make a specialty of Horse Shoer's tools, and seem to have the "knack" of making them just right.

Length 12 in.	13 in.	14 in.	15 in.	16 in.
Each, \$0.50	.55	.65	.75	.90
Doz., 4.50	5.35	6.35	7.50	8.80

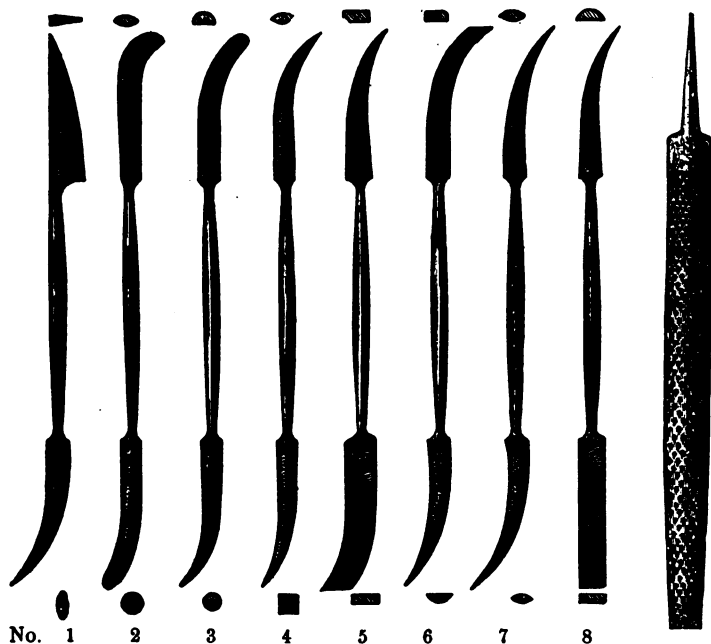


FIG. 254. RIFFLER FILES AND RASPS.

FIG. 255. HALF-ROUND WOOD RASP.

Wood Files are the same shape and price as Wood Rasps.



FIG. 256. HORSE RASP.

The Riffler Files and Rasps, Fig. 254, are used by carvers, pattern makers, stone cutters, etc. We keep them in two lengths, 6 and 8 inches.

6 inch, per set of six, \$2.50; each, 50 cts.

8 " " " " 3.00: " 60 "

**SPECIAL FILES**

We can furnish a great variety of files that are not shown or priced here, such as Silver Rifflers, Float, Cant, Slotting, Feather Edge, Gulleting, Ginsaw, High-Back, Hook Tooth, Chacquering, etc., etc.

## SAW FILES.

On the foregoing pages will be found prices of regular Saw Files, both Taper and Slim Taper, Single Cut. For saws that incline towards softness the Single Cut file is all right, but for medium and hard saws we recommend the Double Cut. The best known Files of this kind are the genuine P. S. Stubs, and, while we may be prejudiced a little by ancient history, we are inclined to believe that these are the best files of this type made. We have a Stubs' Pattern File made especially for us, that we believe is almost as good as the genuine Stubs. They are very much less in price, and we do not think the Stubs' are worth the difference. However, we handle both, and our customers can decide for themselves.

### P. S. STUBS' SAW FILES.

Size,	3	3½	4	4½	5	6
Each,	\$0.14	\$0.15	\$0.16	\$0.23	\$0.25	\$0.28
Doz.	1.36	1.44	1.60	2.24	2.48	2.80

### STUBS' PATTERN SAW FILES.

Size,	3	3½	4	4½	5	6
Each,	\$0.07	\$0.08	\$0.09	\$0.11	\$0.12	\$0.16
Doz.	.72	.80	.90	1.08	1.15	1.60

### DOUBLE ENDED TAPER FILES.

The lengths given in table are over all, and the 8 inch file is equal to two 4 inch common saw files, others in like proportion.

Size,	7	8	9	10
Each,	\$0.09	\$0.10	\$0.11	\$0.13
Doz.	.80	.90	1.00	1.25

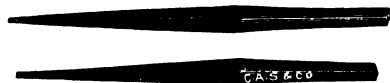


FIG. 3560. AUGER BIT FILES.

Each, \$0.18; Doz., \$2.00—post paid.

The cut shows a new style of File designed especially for use in filing Auger Bits and Augers. This is a great improvement over the Moore Auger Bit File shown in former catalogues. It has about twice the cutting surface, and is much more convenient to use. The

ordinary style of file is quite unsuitable for filing augers and bits, as it is apt to file away a portion of the screw or lip, oftentimes spoiling the tool. The file shown here is cut on both sides of one end, the two edges being left "safe" or uncut. On the other end, which is triangular in shape, it is cut on the three sides, and the edges are ground "safe." These files are double cut, medium fine, and perfectly adapted for the steel and temper of Auger Bits. They can also be used to good advantage on all kinds of small Moulding Knives.



FIG. 3561. PLANER KNIFE FILE.

Each, \$0.25; Doz., \$2.50.

This is a comparatively new style of file, and is of more than ordinary value for sharpening Planer and Moulding Knives and similar work. One end is a fine mill-cut, the other a fine double-cut; it is furnished in but one size. 10 inches long, ½ wide and about ¼ thick. We sell a great many of these, and would doubtless sell a great many more if we could get more people to try them, and as an inducement to this end, we will send a sample by mail post-paid upon receipt of the price.



FIG. 3562. FILE CARD.

Each, \$0.25; postage, 5 cts. Doz., \$2.50.

These are provided with a Scorer, which is used to remove the "Pins" which fill up and clog the teeth, causing scratches in the work if not removed. The Brush will be found a most efficient annex to the Card, especially upon finer files, removing the filings much more effectually than can be done by the Card alone.

### FILE CARD WITH BRUSH.

Each, \$0.40; postage, 7 cts. Doz., \$4.40.

We carry in stock the Card Cloth similar to that used on these cards, 2 inches wide at 35 cents per running foot; can also furnish Card Cloth of any desired style, width or coarseness.



## MITER BOXES.

We present here a very complete line of various styles of Miter Boxes. In the higher grade of Miter Boxes the Langdon has been on the market for a great many years, and is perhaps the best known of any. The Excelsior Miter Box (Fig. 8564) while comparatively new, is very well liked, as it is a well made tool and has several very novel and excellent features.

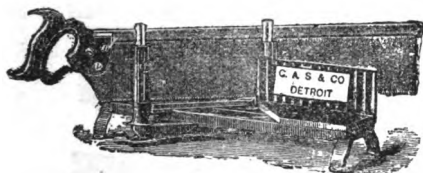


FIG. 3563. NEW LANGDON MITER BOX.

No. 18, with 20x4 in. Saw.....	\$8.25
“ 20, “ 24x4 “ “ .....	9.25
“ 23, “ 24x4 “ “ .....	10.25
“ 25, “ 28x5 “ “ .....	12.00

Nos. 18 and 20 take stock 6 in. wide at right angles, 4 in. at miter; Nos. 23 and 25 take stock 9½ in. wide at right angles and 6½ in. at miter.

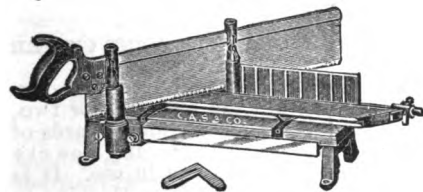


FIG. 3564. EXCELSIOR MITER BOX.

This Miter Box has more desirable features than any other. Among its features are the Screw Clamps which hold the moulding while sawing, avoiding liability of its shifting while the saw is in the cut; a Stop for regulating length; an Extension Post Holder for sawing extra wide stock. The Saw Guides are made of steel instead of cast iron, as is common in all other miter boxes, and it is, we believe, the only miter box that will cut a fraction of a joint true to miter; will cut angles up to 75 degrees

The above mentioned are special advantages. Besides these it has practically all points of advantage that are

common to the higher grade of miter boxes. Each miter box is provided with a saw specially fitted.

Nos. 422, 426 and 430 are provided with saws 4 inches under back, and these boxes will take stock 6 in. wide; No. 530 has saw 5 in. wide, and will take stock 7 in. wide; No. 630 is the largest size, has saw 6 in. wide under back, and will take stock 8 in. wide.

No. 422, with 22x4 in. Saw.....	\$9.00
“ 426, “ 26x4 “ “ .....	10.00
“ 430, “ 30x4 “ “ .....	11.00
“ 530, “ 30x5 “ “ .....	13.00
“ 630, “ 30x6 “ “ .....	15.00

Extension Front Post Holder Attachment for sawing stock 3 in wider, for any of the above boxes \$1.00.

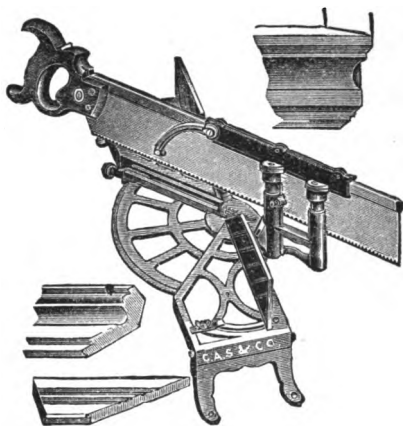


FIG. 3565. UNIVERSAL MITER BOX.

This Miter Box can be adjusted to all commonly used angles, can be set to cut the depth of tenon at right angles, also under-cut by tilting the saw guide; is graduated to cut 22½, 45 and 90 degrees, but many odd angles may be cut by filing notches in the semi-circle for the stop to engage in. It is especially adapted to the use of Carpenters, Builders, Show Case makers, Carriage makers and Joiners' work generally.

A longer stroke of saw is obtained than with the ordinary box, and it can be used for cutting cornice and base boards up to 12 in wide.

No. 424, with 24x4 saw, \$10.00; No. 428, with 28x4 saw, \$11.00.

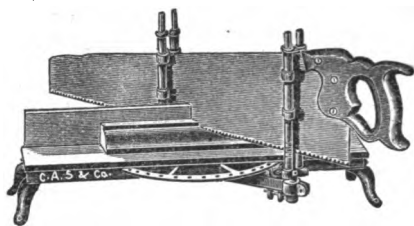


FIG. 3566. JOHNSON MITER BOX.

This Miter Box is, we believe, the best of the medium priced miter boxes. It can be used with either a back or a panel saw, and can be set at all the commonly used angles. Price without saw \$5.85.

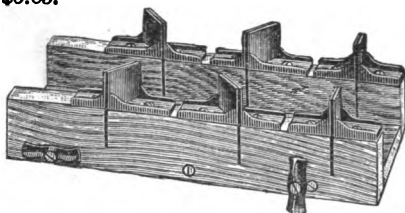


FIG. 3567. OLMSTEAD MITER BOX.

In this Box is furnished a low priced substitute for the ordinary home-made affair, which is as a rule a pretty poor thing. These Boxes can be used with Back, Panel or Hand saw. The frames are made of best quality hard wood well finished. Price, without saw, \$1.75.

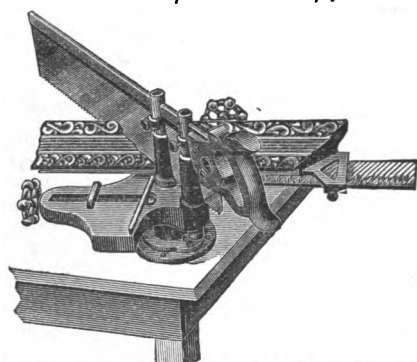


FIG. 3568. COMBINED MITER SAWING MACHINE AND VISE.

This machine is designed for sawing and joining any kind of moulding, and is used almost entirely by picture frame makers. It is the only machine upon

which a frame may be completed. Any size frame from 6½ in. square and upwards, mouldings 5 in. wide or less, can be joined complete. The saw guides are placed in the center, by means of which a longer stroke is obtained, thus producing work very fast.

No. 1, with Saw 22x4 in. .... \$14.00  
 " 3, " " 26x4 " ..... 15.00

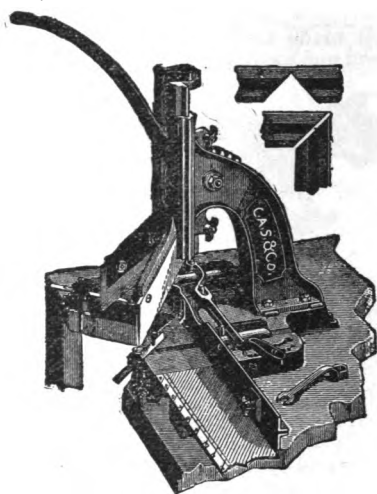


FIG. 3569. ADJUSTABLE JOINT CUTTER AND PLANER.

This machine, although improved considerably within the last year or two, has been on the market for upwards of fifteen years, and there are nearly twenty thousand of them in use. It is undoubtedly the best Miter Machine in the market; is used by Picture Frame Sash, Door and Blind, Cabinet and Furniture manufacturers, and in every branch where mitering is done. It is simple and easy to operate, and produces clean and perfect miters. The knives have a steady, powerful shearing cut, and will not break the rabbit or injure the ornament or finish on the face of a moulding.

No. 1, \$36.00, cuts 4 in. wide, 3½ in. high, weight 110 lbs.

No. 2, \$55.00, cuts 5 in. wide, 4½ in. high, weight 220 lbs.

Angle Attachment for No. 1, for trimming odd angles, \$2.50.

Foot Power and Stand for No. 1, with Balance Weight, \$6.00.

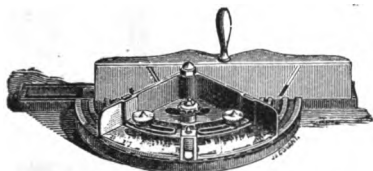


FIG. 2570. MITER PLANER.

This Planer is arranged for planing any desired angle on straight or curved work. The main bed piece is semi-circular in form, with ways at the rear on which the plane runs.

No. 2, with 2 in. cutters, \$20.00

No. 3½, with 3½ in. cutters, \$25.00.

No. 4, with 4 in. cutters, \$30.00.

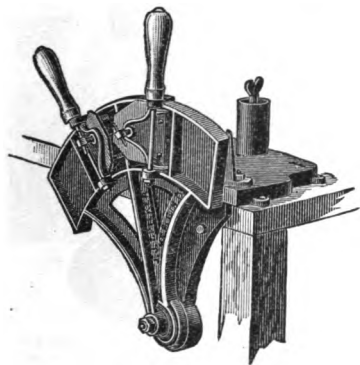


FIG. 3571.

## COMPOSITION MITER PLANE.

This Plane is especially adapted for planing perfect miter on all kinds gilt, composition and hardwood mouldings without injuring the ornament or finish on the face.

No. 0 planes mouldings 4 in. high, 6½ in. wide, 9½ in. on the miter, knife 4½ in. wide, weight 75 lbs., price \$28.00.

No. 00 planes mouldings 5 in. high, 7½ in. wide, 10½ in. on the miter, knife 5½ in. wide, weight 110 lbs., price \$35.00.

**NOTE**—If you will take the pains to explain your wants as fully as possible it may save us considerable trouble. You know what you want—or at least what you want to accomplish—we don't, and are poor "guessers."

Another good idea is to—sometimes—inclose a stamped, self-addressed envelope.

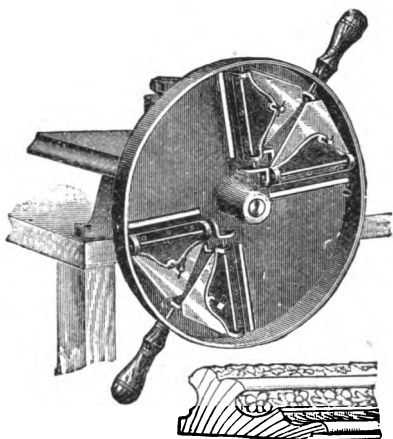


FIG. 3572. WHEEL MITER PLANER.

This is of the same type as Fig. 3571. It will plane mouldings 5 in. high and 7 in. wide. The knives are four in number, 6 in. wide, and are reversible. Price \$35.00, weight 150 lbs.

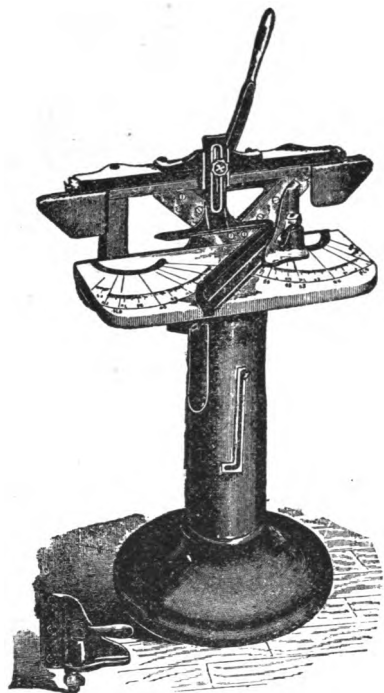


FIG. 3573. NO. 8 TRIMMER (rear view).

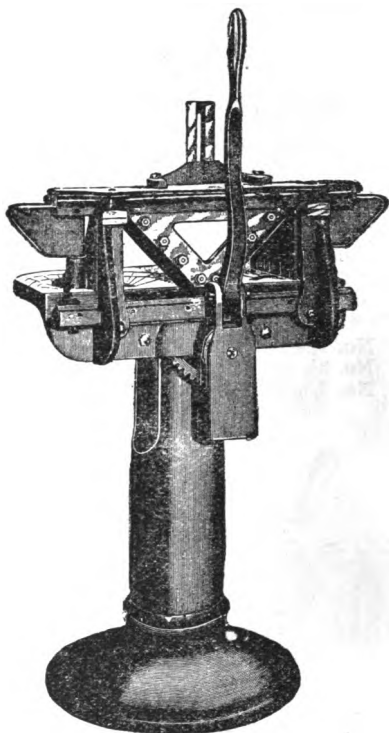
The above illustration represents a Bench Trimmer that is used very generally by Pattern Makers, Carpenters, Builders and Wood Workers. There are upwards of ten thousand of these Trimmers in use. It will trim 7 in. wide and double miter 5½ in. wide. The bed is 20x8 in., weight 60 lbs., price \$22.50.

When desired we can furnish a Stand upon which Trimmer may be mounted. Weight of Stand 125 lbs., price \$7.00.

**TEARING CATALOGUES**—Every article in this catalogue is very plainly described, either by figure number, regular number, or name; and we beg our customers not to cut or tear the pages as this mutilates catalogue and destroys it for future reference.



(Front View.)



(Back View.)

FIG. 3577. UNIVERSAL TRIMMING MACHINE.

This is one of the modern tools which has made for itself a permanent place in the most advanced wood working shops. It secures accuracy. It saves time. It makes money.

The desirability of obtaining a required angle by one light cut on the Trimming Machine rather than by several repeated attempts with the hand plane, was so apparent, that the first primitive machines which were designed for this purpose, found an extensive sale with all their defects.

About three years ago we designed and built a Universal Trimmer. Every machine of this character then on the market was a combination of trappy contrivances. The Trimmer we made at that time was the first one constructed on correct mechanical principles. To the superior design, accurate construction, and widened range of work

made possible of accomplishment, we attribute the sale of 2,000 of these machines during the past three years of extreme business depression.

Profiting by the opportunities afforded of learning the possibilities and requirements of the most progressive pattern shops, we have designed and placed upon the market a Trimming Machine as much superior to our former production as that machine was superior to its predecessors.

**BEARINGS**—Entirely adjustable; accuracy permanently achieved.

The primary and most essential feature of a Trimming Machine is its accuracy, which cannot be secured if the bearings are loose, and sliding surfaces will become loose by constant use. No Trimmer heretofore made, has any provision for taking up this wear. By two ingenious yet simple, patented gibs, this



FIG. 3578.

The Figures shown above were actually made on our Trimming Machine. The Blocks were photographed and this cut made from photograph. They suggest only a few of the desirable cuts which can be advantageously made on our Trimmer.

looseness is entirely overcome in our present machine, and the working parts may be kept in perfect alignment.

Accurate work can be secured when the machine is new, and also when other trimmers would have become worn and useless.

**STEEL SHOES**—Beveled edges, easily adjustable.

**GAUGES**—Located positively, located accurately, located instantly.

**ANGLES**—Every separate degree plainly shown and accurately located.

Realizing that it is often desirable to use the machine for making accurate templates for the angles on bevel gears or other pattern work, we have very carefully graduated the machine from 30 to 135 degrees. We have given every separate degree, which enables the operator to obtain any desired angle, in addition to the eight angles

most commonly used, which are the only ones marked on any trimmer previously placed on the market. These degrees are laid off from a 30" index circle, and can be relied upon as more accurate than many bevel protractors now in use on ordinary machine work.

**UNIVERSAL ATTACHMENT**—For crown mouldings; for irregular patterns.

This fixture adds materially to the scope of possible work on a Universal Trimming Machine.

**GRADUATIONS**—Linear Scale on side gauges.

**LEVER**—Unique, powerful, convenient. The lever can be instantly adjusted to any position by an improved patented device.

Weight of machine, 325 lbs.; price, \$75.00; with Universal Attachment, \$80.00.

## BOXWOOD AND IVORY RULES.

We show and price here a selection from our stock of rules. Some of these are peculiarly useful, and are not generally found on sale. Among them are the Slide Rules, Architects' Two feet Caliper, and the German Flexible Rules.

Ivory Rules are desirable for gifts, and where the eyesight is poor, as the black markings on white are more easily read. We do not consider them as reliable as the Boxwood, as they are more apt to shrink. Have seen a first-class Ivory Rule that had shrunk nearly one-eighth of an inch in two feet. However, this class of rule is not often used for close work, and even as extreme a variation as the above (which is of course very uncommon), might not be so serious.

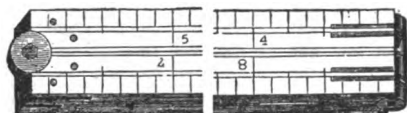


FIG. 136. "ROUND JOINT."

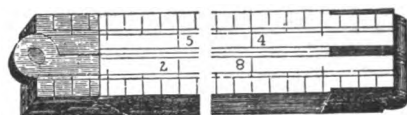
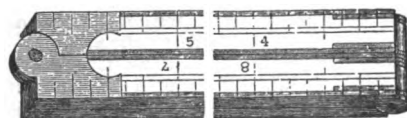
FIG. 137  
"SQUARE JOINT" (with Edge Plates).

FIG. 138. "ARCH JOINT" (full bound).

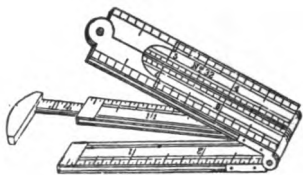


FIG. 139 No. 32. CALIPER RULE.



FIG. 140 No. 40. CALIPER RULE.

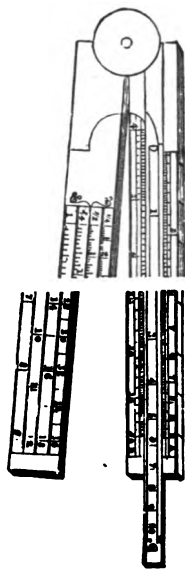
FIG. 141.  
ARCHITECTS' RULE.FIG. 142.  
SLIDE RULE.

FIG. 143. FABER'S SLIDE RULE.



FIG. 144. No. 45. GAUGING ROD.



FIG. 145. No. 87. WANTAGE ROD.

## ONE FOOT RULES.

- No. 69, \$0.10. Boxwood, Round Joint.  
 " 64, .15. " Square "  
 " 65½, .30. " " " full  
 Brass bound.  
 No. 92, \$0.75. Ivory, Square Joint.  
 " 88½, 1.00. " Arch Joint.  
 " 88, 1.50. " " " full  
 German Silver bound.

All of the above are  $\frac{3}{4}$  inch wide, and divided into 8ths and 16ths of inches.

## TWO FEET, FOUR FOLD.

(Extra narrow,  $\frac{1}{2}$  inch wide.)

- No. 61½, \$0.30. Boxwood, Square Joint.  
 " 62½, .40. " " "  
 full Brass bound.  
 No. 56B, \$3.75. Ivory, Arch Joint, full  
 German Silver bound.

All of the above are divided into 8ths, 10ths, 12ths and 16ths of inches.

## TWO FEET, FOUR FOLD (one inch wide).

- No. 68, \$0.10. Boxwood, Round Joint.  
 " 63, .15. " Square "  
 " 84, .30. " " "  
 Brass bound on outside edge.  
 No. 62, \$0.35. Boxwood, Square Joint,  
 full Brass bound.  
 No. 51, \$0.20. Boxwood, Arch Joint.  
 " 52, .35. " " "  
 Brass bound on outside edge.  
 No. 60, \$0.55. Boxwood, Double Arch  
 Joint, full Brass bound.  
 No. 85, \$2.50. Ivory, Square Joint.  
 " 87, 4.00. " Arch " full  
 German Silver bound.

With the exception of No. 68, all of the above are divided into 8ths, 10ths, 12ths and 16ths of inches, and have a simple form of draughting scale.

## TWO FEET, FOUR FOLD (Broad).

(1½ inches wide.)

- No. 72, \$0.30. Boxwood, Square Joint.  
 " 72½, .50. " " "  
 full Brass bound.  
 No. 78½, \$0.65. Boxwood, Double Arch  
 Joint, full Brass bound.

All of the above are divided into 8ths, 10ths and 16ths, and draughting scale.

- No. 83, \$0.45. Boxwood, Arch Joint with  
 slide, 8ths, 12ths and 16ths, 100ths of  
 a foot and octagonal scales.  
 No. 82, \$0.65. Boxwood, Arch Joint,  
 full Brass bound, 12ths and 16ths,  
 draughting scales and board measure.

(3)

- No. 95, \$4.75. Ivory, Arch Joint.  
 " 97, 5.50. " Double Arch Joint.  
 Nos. 95 and 97 are full German Silver  
 bound, divided into 8ths, 10ths, 12ths and  
 16ths of inches, and draughting scales.

## TWO FEET, TWO FOLD.

(1½ inches wide.)

- No. 18, \$0.15. Square Joint, 8ths and  
 16ths.

- No. 4, \$0.35. Arch Joint, 8ths and 16ths.  
 draughting and octagonal scales.

We would especially recommend the  
 No. 4 to those who are in the habit of  
 using a rule of this form. It weighs less  
 than one-half as much as the ordinary  
 style, but on account of its construction,  
 (the plates being on outside of wood) is  
 very much stronger.

## CALIPER RULES. (Figs. 139 and 140.)

- No. 13, \$0.30. Boxwood, Two fold, 6 in.  
 No. 36½, \$0.40. Boxwood, Two fold, 12  
 inch, 8ths, 10ths, 12ths and 16ths.  
 1½ inches wide.  
 No. 32, \$0.30. Box, Arch Joint, 1 in. wide.  
 No. 32½, \$0.50. Box, Arch Joint. 1 inch  
 wide, Brass bound.  
 Nos. 32 and 32½ are Four fold, 12 inch,  
 divided into 8ths, 10ths, 12ths and 16ths.  
 No. 38, \$0.75. Ivory, Two fold. 6 inch,  
 $\frac{1}{2}$  inch wide.  
 No. 39, \$1.75. Ivory, Four fold, 12 inch,  
 $\frac{1}{2}$  inch wide.  
 No. 40, \$2.20. Ivory, Four fold, 12 inch,  
 $\frac{1}{2}$  in. wide, full German Silver bound.  
 No. 830, \$1.50. Boxwood, Four fold, 2 ft.

This rule we have made especially for  
 us, and we sell great numbers of them.  
 Will caliper stock up to two inches in  
 diameter.

## ARCHITECTS' RULES.

This is a style of rule that has been  
 used for a great many years in England,  
 and has only come into general use in this  
 country the past few years. It is exceed-  
 ingly useful for architects, builders, and all  
 those who handle drawings that are laid  
 out in fractional scale. The rule when  
 closed is in appearance the same as an  
 ordinary folding pocket rule, and can be  
 used as such. The draughting scales are  
 on inner edge of inside (see Fig. 141).  
 No. 53½, \$0.50. Boxwood, Arch Joint, 1  
 inch wide, divided into 8ths, 10ths,  
 12ths and 16ths of inches, and the bev-  
 eled edges into architects' scales of  $\frac{1}{2}$ ,  
 $\frac{1}{4}$ ,  $\frac{3}{4}$  and  $\frac{1}{8}$  inch to the foot.

No. 13 $\frac{1}{2}$ , \$0.50. Same as No. 53 $\frac{1}{2}$ , but  $\frac{1}{2}$  inch wide.

No. 28 $\frac{1}{2}$ , \$0.60. Same as No. 53 $\frac{1}{2}$ , but  $1\frac{1}{2}$  inch wide.

No. 86 $\frac{1}{2}$ , \$5.00. Ivory, Arch Joint, with German Silver Edge Plates (not bound), 1 inch wide. Same style and graduation as No. 53 $\frac{1}{2}$ .

The following are the same general style; imported English make and of finer quality:

No. 1119, \$1.50. Brass, Arch Joint and Edge Plates (not bound),  $1\frac{1}{2}$  inch wide; outside of rule divided into 8ths, 10ths, 12ths and 16ths of inches. Inside bevel edges graduated to architects' scales of  $\frac{1}{16}$ ,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $1$ ,  $1\frac{1}{2}$  and 1 inch to the foot. Angles of 45, 60 and 90 degrees on joint.

No. 1123, \$3.00. Boxwood, Arch Joint, German Silver mounted,  $1\frac{1}{2}$  inch wide, divided on outside into 8ths, 10ths, 12ths and 16ths of inches, with 16 architects' scales on inside, from  $\frac{1}{16}$  to 3 inches to the foot. Degrees marked on joint.

No. 1289, \$7.50. Same as No. 1123, but choice Ivory, with German Silver mountings.

#### MISCELLANEOUS RULES.

No. 58, \$0.50. Boxwood, 2 feet, 6 fold, Arch Joint, divided into 8ths, 10ths, 12ths and 16ths.

No. 58 $\frac{1}{2}$ , \$1.25. Same as No. 58, but full Brass bound.

No. 60, \$4.25. Ivory, otherwise same as No. 58.

No. 60B, \$5.00. Ivory, same as No. 60, but full German Silver bound.

All of the above are  $\frac{1}{2}$  inch wide.

No. 66 $\frac{1}{2}$ , \$0.35. Boxwood, 3 feet, 4 fold, Arch Joints, 1 inch wide.

No. 94, \$1.75. Boxwood, Carriage-makers' Rule, 4 feet, 4 fold, Arch Joint, full Brass bound,  $1\frac{1}{2}$  inch wide.

No. 42, \$0.20. Boxwood, Ship-carpenters' Bevel, double tongue.

No. 41, \$0.25. Yard Stick Brass tipped.

" 50, .35. " " Hickory caps.

" 45, .60. Gauging Rod (Fig. 144).

" 37, .65. Wantage Rod (Fig. 145).

These rods, or rules, are used to ascertain the capacity of a barrel; the wantage rod is used in connection with the gauging rod. The No. 44 has 12 tables, for barrels of 16 to 120 gallons capacity.

Stephens' Combination Rule, \$2.00.

Boxwood, 1 foot, 2 fold. This combines in itself a Rule, Spirit Level, Plumb, Square, Bevel, Indicator, Brace Scale, Draughting Scale of equal parts, T Square, Protractor and Right Angle Triangle.

#### SLIDE RULES.\* (Fig. 142).

These Rules are very largely used by the most intelligent class of engineers, architects, scientists, designers of machinery, surveyors, and intelligent mechanics generally.

They are also particularly adapted to the use of persons having charge of Cotton or Woolen machinery. The quickness and ease with which different calculations can be made, is little short of marvelous.

No. 12, \$0.50. Boxwood, Arch Joint, Gunter's Slide, divided into 8ths, 10ths and 16ths of inches; draughting and octagonal scales,  $1\frac{1}{2}$  inches wide.

No. 15, \$0.85. Same as No. 12, but full Brass bound.

No. 6, \$0.65. Boxwood, Arch Joint, Gunter's Slide, for Engineering, divided into 8ths, 10ths and 16ths of inches; octagonal scale  $1\frac{1}{2}$  inches wide.

No. 16, \$1.00. Same as No. 6, but full Brass bound.

We have an improved treatise on the Gunter's Slide and Engineers' Rules, showing their utility, and containing full and complete instructions; 200 pages, bound in cloth. Price, \$1.00.

Faber's improved Calculating Scale (Fig. 143). Price, with book of instructions, \$3.60. This Calculating Scale, or Mathematical Rule, is made of boxwood, is  $10\frac{1}{2}$  inches long, and has a traversing slide of nicked metal.

Keuffel & Esser's Slide Rule. Price, with directions, \$4.50. Is similar to the above, but is divided on celluloid facings. Can furnish this in 20 inch size; price, \$16.50. The 20 inch size has an advantage, in that they admit of finer divisions and consequent closer readings.

No. 1740, \$30.00. Thacher's Calculating Instrument, performs the greatest variety of useful calculations, with unexampled rapidity and accuracy. Cylinder, 18 inches long, in polished mahogany box.

No. 1741, \$40.00. Same as No. 1740, but with 3 inch Reading Glass sliding on brass bar, and adjustable.



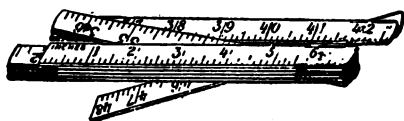


FIG. 146. FLEXIBLE FOLDING RULE.

These pocket rules are, to a great extent, taking the place of the ordinary two foot rule. They are made from two to six feet long, machine-divided and accurate. As they are made of very thin wood, the divisions can be brought close to the object measured. They have spring joints, which hold rule in a straight line when open.

Perhaps their greatest advantage, however, is in their extreme lightness, the two foot rule weighing but one ounce.

Prices are: 2 ft., \$0.40; 3 ft., \$0.60; 4 ft., \$0.75; 6 ft., \$1.25.

## HICKORY, BOARD AND LOG RULES.

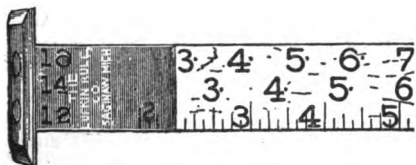


FIG. 147. THREE TIER BOARD RULE.

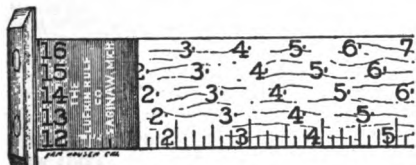


FIG. 148. FIVE TIER BOARD RULE.

These are made of the best second growth hickory, hand shaved. Figures are burned on the wood.

The log rules are furnished regularly with the Doyle or Scribner scale of measurements, but we can furnish any other scale that may be wanted.

No. 1, \$1.75.	3 Tier, 3½ ft.,	Brazed Head.
" 2, 1.60.	3 " 3 "	" " "
" 2½ 1.50.	2 " 2½ "	" " "
" 4 1.35.	3 " 3 "	Socket "
" 6 1.75.	3 " 3 "	Brass Plate.
" 8 1.60.	4 " 3 "	Brazed Head.
" 10 2.00.	5 " 3 "	" " "
" 13½ 2.00.	4 " 3½ "	Board and Log rule combined; Brazed Head.

## LOG RULES.



FIG. 149.

No. 16, 2.00. Hook Head.



FIG. 150.

No. 14, \$2.00. Square Head

Can furnish Log rules for any diameter or length measurements desired.

For all special rules an extra price will be charged.



FIG. 151. STEEL BOARD RULE.

No. 51, \$2.80.	3 Tier, 3½ ft.,	Inspector's.
" 52, 2.40.	3 " 3 "	Board.
" 58, 2.60.	3 " 4 "	" "

The Steel Board rule, Fig. 151, has been in use for some time, and is giving excellent satisfaction. It is nearly as light as a wooden rule, weighing less than sixteen ounces. Is nickel plated and lacquered to prevent rusting.

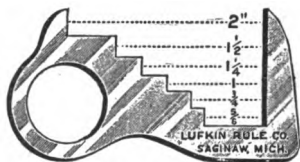


FIG. 152. LUMBER GAUGE.

\$0.50.

A neat device, worn on the finger, for determining the thickness of lumber. Can be carried in vest pocket.



FIG. 153. IMPROVED MARKING STICK.

\$1.00.

This is adapted to lumber crayons of standard makes; is 36 inches long, with hickory handle.

## SHRINK RULES

Pattern Makers Shrinkage Rules are tools of great importance. We carry a very complete line of these.

## BOXWOOD SHRINK RULES

No. 30, \$0.65; this is the simplest style, is graduated to 8ths and 16ths.

No. 31, \$0.90, same as No. 30 excepting that it folds to 12 in.

Both of the above have the single shrinkage for iron,  $\frac{1}{4}$  to ft.

No. 1601, \$1.75; this Rule has on one side the Standard, together with the scales of  $\frac{1}{4}$ , 1,  $1\frac{1}{2}$ , 2 and 3 inches to ft. On the other side Single and Double shrinkage for Iron.

No. 1602, \$1.75; this Rule has on one side the Standard, together with the scales of  $\frac{1}{4}$ , 1,  $1\frac{1}{2}$ , 2 and 3 inches to ft. On the other side Single and Double shrinkage for Brass.

The Nos. 1601 and 1602 are unusually fine in quality of wood and graduation.

NOTE—In making patterns for aluminum castings the shrinkage to be allowed is  $\frac{1}{4}$  inch to ft. To obtain the relative weight of aluminum to copper, brass or steel, divide by 3.

## STEEL SHRINK RULES.

The Steel Shrink Rules are carried in stock in 12 and 24 in. sizes. In these we have what is known as the No. 4 graduation, which is as follows: 1st edge 64ths, 2d edge 32ds, 3d edge 16ths, 4th edge 8ths.

Can furnish to order at same price, with No. 2 graduation, which is as follows: 1st edge, 10ths, 20ths, 50ths and 100ths; 2d edge, 12ths, 24ths and 48ths; 3d edge, 16ths, 32ds and 64ths; 4th edge, 8ths.

No. 370 Shrink,  $\frac{1}{4}$  to ft.; No. 373 Shrink and Standard,  $\frac{1}{4}$  to ft.; No. 375 Brass Shrink,  $\frac{1}{4}$  to ft.; No. 377 Double Shrink,  $\frac{1}{4}$  to ft. Price of 12 in., any style, \$1.80; 24 in., \$3.60.

Draughtsmens' Scales—See Draughtsmens' Supplies in this catalogue.



FIG. 3600. 2 FOOT STEEL RULE.

This is a Rule we sell large numbers of. It is used very extensively by black-

smiths and carriage makers. Is made of Steel,  $\frac{1}{4}$  in. wide, with stop-joint and brass ends. Price, \$0.75.

We also have the same Rule in Spring Brass, at same price.

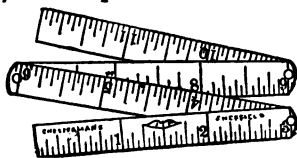


FIG. 3601.

## FOLDING STEEL POCKET RULE.

These Rules are very neat and convenient for light work. Are made of Spring Steel, and will bend to a three-inch circle. They occupy but little space, and are easily carried in the vest pocket.

No. 31,	\$0.20,	1 ft.	3 in.	joints,	4 fold.
" 31,	.45,	2 "	3 "	" "	8 "
" 41,	.20,	1 "	4 "	" "	3 "
" 41,	.45,	2 "	2 "	" "	6 "
" 41,	.75,	3 "	4 "	" "	9 "
" 46,	.75,	3 "	6 "	" "	6 "

Can furnish the above Folding Steel Pocket Rules, nicely Nickel Plated, at an additional expense of 10c, 20c, 30c and 40c each for the 1, 2, 3 and 4 ft. sizes respectively.

Can also furnish a neat stitched Leather Case for the 1 and 2 ft., at \$0.10 each; 3 and 4 ft., at \$0.20 each.

## MEASURING TAPES.

In one of our earlier catalogues we made this statement: "Our Tape Lines are all warranted accurate." That was a good many years ago, and we know more about tapes now than we did then.

All woven tapes, whether cotton, linen or metallic warp, are liable to shrink or stretch. The idea generally prevails that the warp in metallic tapes consists of fine brass or copper wires, but this is not the case; it is tinsel wound on fine cotton thread. For accurate measurements, nothing but steel tapes can be depended upon. Owing to the nature of material used, care should be taken to avoid short kinks in the steel tapes.

Our Steel Tapes are all warranted accurate, and while we describe and price the line of those most generally sold, we can furnish steel tapes in almost

endless variety as regards width, length, style of reel or case, and graduation. For many purposes the lower priced tapes are well adapted.

We must warn our readers against inferior Steel Tapes, of which the market is full, most of them being imported Tapes. We had occasion recently to test a tape line of German make, and found it to be nearly an inch short in 100 ft. At the same time three of our 100 ft. Steel Tapes were tested, and all found absolutely correct. We will guarantee our Steel Tapes not to vary more than  $\frac{1}{16}$ th of a ft. in 100 ft., although they will almost invariably be found exactly right.

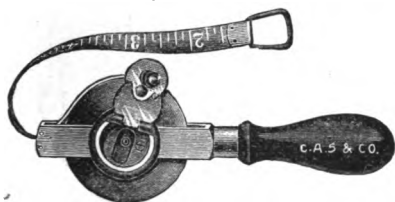


FIG. 3602. FRAME STEEL TAPE.

This style of Tape is used largely by surveyors, and is considered especially advantageous on account of the open frame, rendering it more easily dried and kept free from rust. These have  $\frac{1}{2}$  in. steel tapes, nickel plated frames and trimmings, and patent folding flush handle.

Lgth, ft. 50	66	75	100
Each, \$7.50	\$9.50	\$11.50	\$13.50



FIG. 3603.

**STEEL POCKET TAPE, NICKEL CASE.**

Lgth, ft. 3	5	6	9	12
Each, \$1.10	\$1.35	\$1.50	\$2.10	\$2.75
Postage, .02	.03	.04	.05	.06

The 12 ft. tape is  $\frac{1}{4}$  in., the other sizes  $\frac{1}{2}$  in. wide.

We can furnish the Steel Pocket Tapes same as Fig. 3603, but marked on both sides; U. S. Standard on one and Metrical on the other. The extra cost on 3, 5 and 6 ft. sizes is 10c, and 9 and 12 ft. sizes, 20c.

**SPECIAL STEEL POCKET TAPE.**

We also have a special Steel Tape for pocket, without spring, nickel case, flush handle. Is preferred by many on account of small size—diameter  $2\frac{1}{2}$  and  $2\frac{3}{4}$  in. A beautiful article; we sell many of them to be used as gifts. Price, 25 ft., \$4.00; 50 ft., \$5.50.

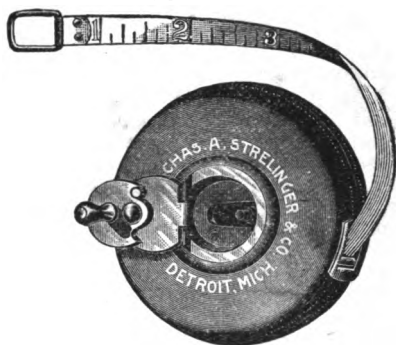


FIG. 3604. STEEL MEASURING TAPE.

Lgth, ft. 25	50	66	75	100
Each, \$3.85	\$6.10	\$7.85	\$8.85	\$11.00

This Tape is, we believe, superior in all respects to anything in this line yet produced; is absolutely accurate, and convenient to handle. Strong, durable and handsomely finished.

Marked ft. and 12ths (inches and 8ths) or 10ths and 100ths of foot for surveyors' use.

With double-folding flush handle, opened by pressing small pin or button on opposite side. Hard leather case, nickel plated trimmings. Tapes are  $\frac{1}{2}$  in. wide.

Can furnish with nickel plated tapes at an advance of \$1.00, \$1.50, \$1.75, and \$2.00 respectively.

We can also supply, if desired, the Chesterman and nearly any other make of tape lines.

THIS BOOK is copyrighted and we caution all parties against using, without our written permission, any of the original matter contained herein.



FIG. 3605. ROY STEEL TAPE.

Lgth, ft.	25	50	75	100
Each,	\$3.25	\$4.00	\$5.25	\$6.75

This Tape is offered to meet the demand from Contractors, Builders, Masons and others, who appreciate the value of steel measuring tapes, but who do not feel inclined to invest in the higher-priced article. While it is sold at a comparatively low price, none of its practical features have been sacrificed. The measurements are as accurate as in our high-priced goods, and are guaranteed. Are marked only on one side, in feet, inches and eighths. Case is nickel plated, and is compact and durable.

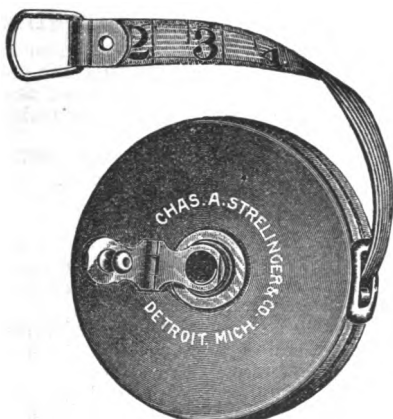


FIG. 3606.

## METALLIC MEASURING TAPE.

This Tape is similar in appearance and style to the well known No. 34L Chesterman Tape. The Tape is  $\frac{1}{2}$  in.

wide, made of best woven linen, with metallic warp, hard leather case, folding handles, divided in 10ths or 12ths, as desired, and reverse side marked with links.

Lgth, ft.	25	50	66	75	100
Each,	\$1.60	\$2.30	\$2.70	\$2.95	\$3.75



FIG. 3607. LINEN MEASURING TAPE.

This is an entirely new line intended to supply the demand for an accurate, strong tape, at a comparatively low price. The Tape is  $\frac{1}{2}$  in. wide, of best woven linen, reinforced with leather the first four inches, and heavily coated. The case is of hard leather with flush handle and nickel plated trimmings. Tapes are marked one side only in feet, inches and half inches.

Lgth, ft.	25	50	75	100
Each,	\$1.25	\$1.65	\$2.00	\$2.50

## ENAMELED CASE TAPE.

(Not illustrated.)

This is what is commonly known as an ass-skin tape, with white enameled brass bound case. It is the lowest priced Tape made, and is only adapted to the most ordinary work. There are several grades of Tapes between this and the Tape represented by Fig. 3607, but when it comes to accuracy and wearing qualities they are really not enough better to warrant us in cataloguing them, although in some cases the prices are two or three times as much.

Lgth, ft.,	25	50	60	75	100
Each,	\$0.35	\$0.55	\$0.65	\$0.75	\$0.90

## DIVIDERS AND CALIPERS.

(In our *Metal Workers' catalogue*, "A Book of Tools" (see page 744 of this book) will be found a complete line of *Machinists' Calipers and Dividers*, embracing some thirty odd styles.)

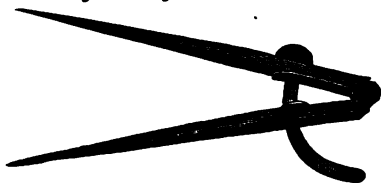


FIG. 3610. WING DIVIDERS.

In the regular Wing Dividers we carry in stock two makes, Bemis & Call and Peck, Stow & Wilcox. The B. & C. are of much the better quality, although the P., S. & W. are superior to the majority of Dividers sold.

Size.	B. & C.	P. S. & W.	Size.	B. & C.	P. S. & W.
5 in.,	\$0.35	\$0.23	12 in.,	\$0.75	\$0.55
6 "	.40	.25	15 "	.....	.90
8 "	.50	.35	18 "	.....	1.30
10 "	.65	.45	24 "	.....	2.00

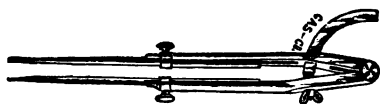


FIG. 3611. COOK'S DIVIDERS.

This is a standard tool, of excellent quality and reasonable in price. They are made with either single or double extension points, which can be replaced by pencil.

Size, in.,	6	7	8	10	15
Single,	\$0.65	\$0.75	\$0.80	\$0.90	\$1.50
Double,	.70	.80	.90	1.00	1.60

Caliper Points \$0.50 per pair.



FIG. 3612.

### IMPROVED EXTENSION DIVIDERS.

This is a tool of the same general design as Fig. 3611, with some improve-

ments; and is a somewhat better tool. The 7 in. size, by adjustment of points becomes 9 in., and will scribe a 22 in. circle, caliper 11 in. outside and 13 in. inside. The 9 in. size, by adjustment of points becomes 12 in., will scribe a 30 in. circle, caliper 14 in. outside and 16 in. inside.

Price, 7 in. Dividers, \$1.12; 9 in. Dividers, \$1.35. Complete with both Inside and Outside Caliper Points, add \$0.90.

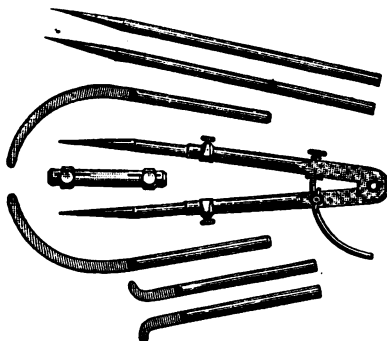


FIG. 3613. IMPROVED BRONZE DIVIDER AND CALIPER.

This is an extremely useful combination tool. The head and socket legs are made from drawn bronze metal, are strong, finely finished and nickel plated. A common pencil fits either socket, while an auxiliary holder fits reversed end of either short point for an extension. The head with short point is 8 in. long; with short points will scribe a 24 in. circle, and with long points a 34 in. circle. Will caliper 10 in. outside and 12½ in. inside.

Price, with short points only, \$2.05; complete, as shown in cut, \$3.60.



FIG. 3614. BALL POINTS.

These Ball Points can be used with Trammels (Fig. 3619), or with Dividers (Figs. 3612 and 3613). The attachment consists of three balls of 1 in., ½ in. and ¼ in. diam. respectively, and a holder which fits either divider leg or trammel head. It is used to form a seat for the

divider leg in describing circles around a hole, and for many purposes is indispensable.

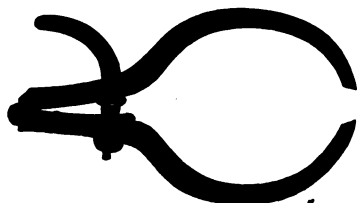


FIG. 3615. WING CALIPERS.

This is a strong, heavy caliper with adjustment. Is a good tool and especially useful to pattern makers and wood turners.

Size, in.	6	8	10	12	15	18
Each,	\$0.60	\$0.75	\$0.90	\$1.15	\$1.72	\$2.50

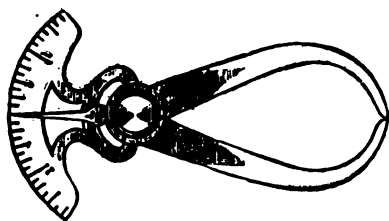


FIG. 3616. REGISTER CALIPER.

This is a little tool that will be found very convenient for pocket use, as approximate measurements are indicated on the quadrant.

Size, in.	3	4	5	6
Each,	\$0.50	\$0.60	\$0.75	\$0.90

### TRAMMEL POINTS OR BEAM COMPASSES.

Trammel Points are indispensable to Machinists, Pattern makers, Carpenters and Millwrights. There is practically no limit to circles which they can describe or distance which can be spaced. They are made to slide on a wood beam, and are therefore very light. Dividers above fifteen inches are not as desirable as Trammels, as their weight makes them awkward to handle. There are numerous kinds made. In our judgment, those shown here are a good selection.

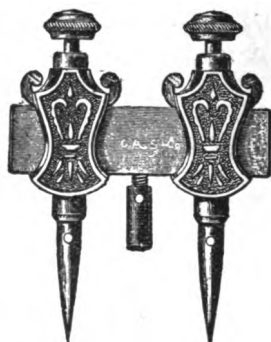


FIG. 3618. STANLEY'S.

This is a good, cheap Trammel that will answer many purpose; are not adjustable. Either of the points can be removed and a pencil inserted.

No. 1,	\$0.85, small size;	Postage, 4 cts.
" 2,	1.00, medium"	" 7 "
" 3,	1.50, large "	" 12 "

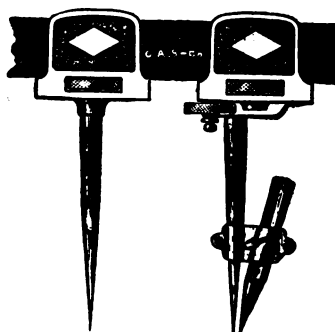


FIG. 3618. DIAMOND.

The Diamond Trammel Point is the neatest and best medium-priced tool of the kind on the market.

	Without Adjustm't.	With Adjustm't.	Size.	Postage.
No. 1,	\$1.15	\$1.60	$\frac{1}{2}$ x $\frac{1}{2}$	4 cts.
" 2,	1.35	1.80	$\frac{3}{8}$ x $\frac{1}{2}$	6 "
" 3,	1.60	2.25	$\frac{1}{2}$ x $\frac{1}{2}$	8 "
" 4,	2.25	3 60	$\frac{3}{4}$ x $1\frac{1}{2}$	16 "

TOOLS BY MAIL—A great many Tools described and illustrated in this book can be sent by mail. We will be pleased to state cost of mailing upon application.

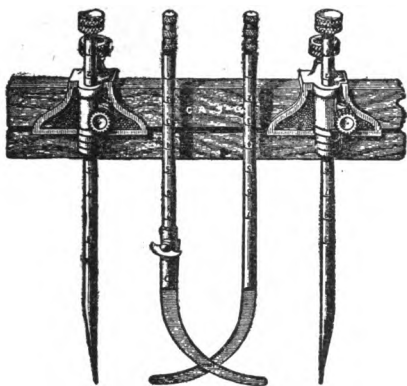


FIG. 3619. NO. 51.

Cook's Beam Trammels are of a high class, and possess many advantages. First, the points can be extended in depth to span projections. Second, both points are graduated, and can always be set parallel to each other. Third, when one surface is below or above the surface from which the center distance is to be spaced, one point can be raised or lowered to keep the points in relation to each other. Fine adjustment can be had by rotating the points in their sockets, as they are made eccentric.

Complete, \$2.90; postage, 22 cts. Without Caliper Legs, \$2.25; postage 16 cts.

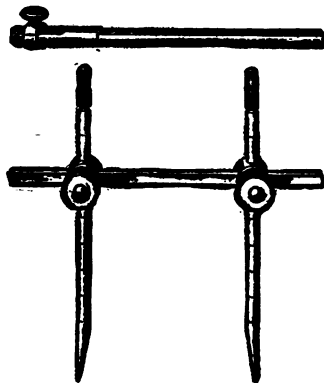


FIG. 3620.

**EXTENSION STEEL BEAM TRAMMEL.**

This is a new tool and an excellent one. The beam is  $\frac{1}{4}$  in. round, with

one side flattened, made in one, two or three sections of 14 in. which can be rigidly coupled together. Fine adjustments are made by a slight rotation of one or the other eccentric points. These Trammels are nicely finished and nickel plated.

One section, 14 in., \$2.35; Two sections, 28 in., \$2.70; Three sections, 42 in., \$3.10. The Ball Points (Fig. 3614) may be used with these Trammels.



FIG. 3621. PENCIL HOLDER.

The Pencil Holder is to be attached to dividers.

Price, \$0.25, postage paid.

**LITTLE THINGS.**

Some writer has said, "Life is made up of Little Things." Another, "It is the Little Things that count." Just notice the barb on a hook; it's little, but it's what holds the fish.

A Carpenters' Pencil is a little thing, but what a nuisance it is to have a pencil that breaks or crumbles, or is hard and gritty and doesn't make a plain, black mark when used.

A Saw File is a little thing, but when a man is doing a job a few miles from the shop, and wants to sharpen his saw, what a difference it makes if his file is a good one or not.

Five Cents is a little thing, but this little difference in the cost of a tool if expended on superior steel and labor may represent the difference between a good—and good-for-nothing—tool.

A 10-Penny Nail is a little thing, but many a good man has lost his life by using two or three nails too few in a scaffold.

In making up this catalogue, we believe that we have realized fully the importance of Little Things. **HAVE YOU NOTICED IT?**

# MATHEMATICAL INSTRUMENTS AND SUPPLIES.\*

In selecting our line of Instruments and Supplies, we have had one purpose in view, to which all others have been made subservient—that is—to select only the best goods in each respective class, it is possible for us to obtain.

There is probably no line in our whole business in which so much chance for deception occurs as in this, and it always has been, and is now, our aim to present goods exactly as they are. To this we owe, to a great extent, our constantly increasing trade in this line.

The following pages contain, in a very condensed form, a partial list of the goods of this line which we carry in stock, but those illustrated and described here are by no means all that we can supply. We are constantly adding to our line, and it would be impossible to illustrate (neither have we the space) our entire line of these goods.

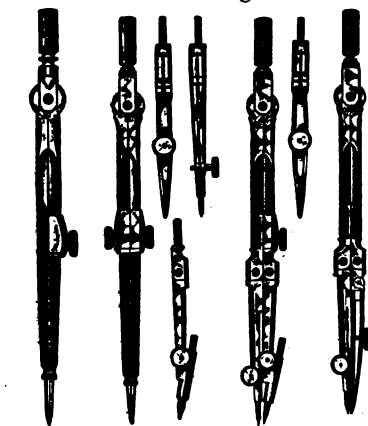
## SWISS INSTRUMENTS.

Our Instruments have been selected with a view to having only the most useful and necessary, and as coming first, being the best, we have selected the justly celebrated Swiss Instruments, all fitted with the Alteneder Pivot Joint, which is without doubt, the best joint that was ever used in any instrument. The material from which these instruments are made is rolled German silver plate, and are the only ones made in this way. The rolling of the metal insures perfect density and hardness. To work this hard-rolled material, naturally requires more time and expense in fitting up the different parts, than to simply polish and buff the cast parts that are used in many other instruments, claiming to be "Just as good." The steel parts are hand-forged from English steel.

These Instruments are the result of years of experience in manufacturing, and the designs are the result of many experiments and suggestions of numerous professional men.

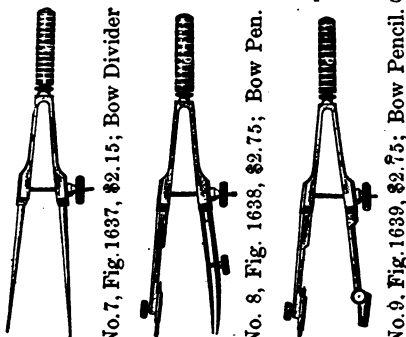
\*"The loss of time arising from the use of inferior instruments, sometimes amounts to more in a single year than the cost of a full set of the best instruments made."—*Points about Drawing Instruments.*

The accompanying cut, Fig. 1632, will give a very good idea of the Joint used in the Swiss Instruments. The sides of the Joint are scraped to a surface, and are held in position by a yoke, through which two pointed set-screws pass, and they in turn are held to position by smaller screws, making it, without doubt, the best Joint for a drawing Instrument.



No. 2. No. 4. No. 3. No. 5.  
FIG. 1633. FIG. 1634. FIG. 1635. FIG. 1636.  
No. 1, \$2.05; Plain Divider.  
No. 2, \$2.70; Hairspring Divider.  
No. 3, \$5.40; Compass, with Pen, Pencil, and Needle Points.  
No. 4, \$6.30; Compass, with Pen, Pencil and Fixed Needle Point.  
No. 5, \$3.20; Pen, with Fixed Points.  
No. 6, \$3.20; Pencil, with Fixed Points.

The above Instruments are  $\frac{1}{4}$  in. long.



Nos. 7, 8 and 9 are  $3\frac{1}{4}$  inches long.



The Instruments shown and described on pages 764 and 765 embody the ones most commonly used. They are made of the best material and workmanship, and are guaranteed to be superior tools.

We solicit correspondence on other tools not shown in this catalogue.

No. 16, Plain Bow Divider, \$2.50; is the same size and style as Fig. 1640.

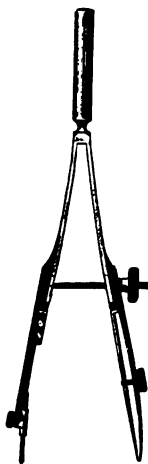


FIG. 1640.  
No. 17, \$3.00;  $\frac{1}{4}$  inch Spring Pen.

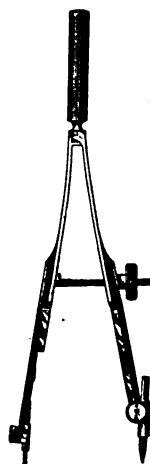


FIG. 1641.  
No. 18, \$3.00;  $\frac{1}{4}$  inch Spring Pencil.

No. 19, \$9.50; Nos. 16, 17 and 18 in case.

" 10, 2.50; Fig. 1644, 6 in. Plain Divid.

" 11, 2.90; " 1644, 7 " " "

" 12, 3.15; " 1645, 6 " Hair Sp'g "

" 13, 3.60; " 1645, 7 " " "



FIG. 1642.  
Plain Spring Pen, \$3.60.



FIG. 1643.  
Plain Spring Pen and Pencil combined,  
\$4.50

We desire to call attention to Figs. 1642 and 1643. These are especially useful on bolt and rivet work or where numbers of small circles are to be made.

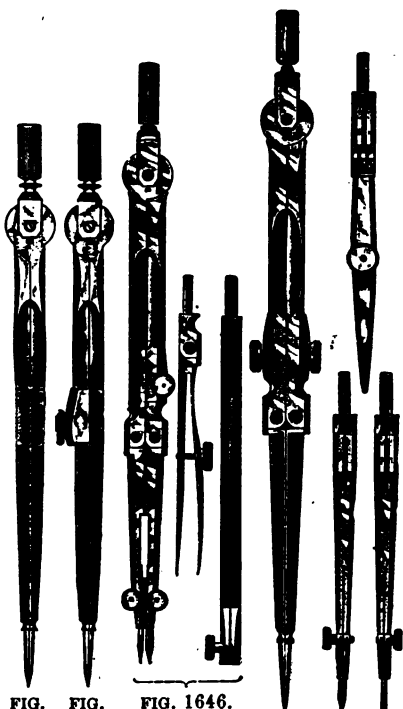


FIG. 1644. FIG. 1645. FIG. 1646. FIG. 1647. NO. 15.

No. 14, \$7.00; Fig. 1646, 6 in. Compass, with Pen, Pencil, Fixed Needle Point and Lengthening Bar.

No. 15, \$7.75; Fig. 1647, 6 in. Compass, with Pen, Pencil, Needle Points, and Lengthening Bar.



FIG. 1648. SET NO. 20.

SWISS INSTRUMENTS, IN CASE, \$21.50.

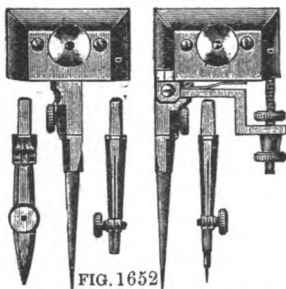
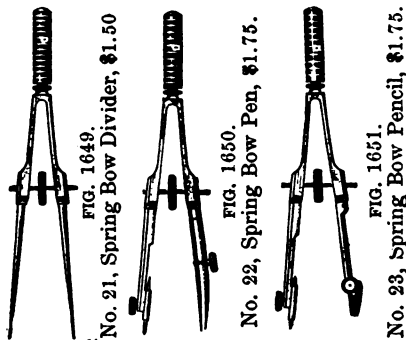
Our Swiss Instruments are put up in a variety of sets, more or less complete. We have selected Fig. 1648 as the most desirable to show, as it contains all the more important and useful tools, and is recommended on this account.

This set contains 1 pair Compasses, No. 14; 1 Divider, No. 12; 1 each, Bow Instrument, Nos. 7, 8, 9; and 1 each,  $\frac{1}{4}$  and 5 in. Ebony Handle Drawing Pen.

### SUPERIOR GERMAN INSTRUMENTS.

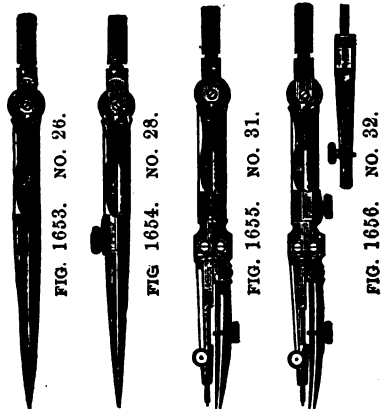
Coming after the Swiss in point of quality and usefulness, is our line of Superior German Instruments. They are also made with a pivot joint, and very closely resemble the former. They will, in most cases, do the work of the foreman, machinist, pattern-maker, carpenter or other mechanic quite well enough, where the extreme accuracy expected of the draughtsman or designer is not required.

Where the mechanic is an enterprising fellow, and likes to lay out any piece of work given him, and be sure he is right (on such work as is not laid out in detail for him), these Instruments are especially desirable.

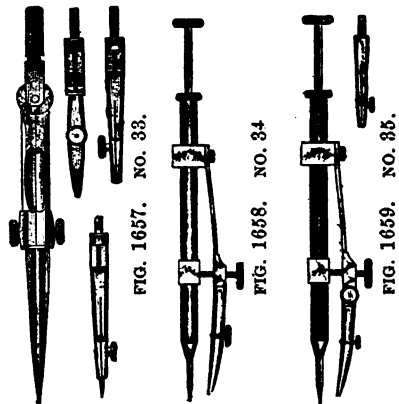


Price \$6.75; in neat Morocco case, \$7.25.

The Beam Compass, shown above, will fit any regular size straight edge, and is made adjustable by means of a screw, as shown, by which it may be set very accurately. Made of German silver, has two Steel Points, Pen, Pencil, and Needle Point.



- No. 26, \$1.50;  $4\frac{1}{2}$  inch Plain Divider.
- " 27 1.75; 6 " " "
- " 28, 2.00;  $4\frac{1}{2}$  " Hair Spring Divider
- " 29 2.50; 6 " " "
- " 30, 3.00;  $4\frac{1}{2}$  " Compass, with Fixed Needle and Pencil Point
- No. 31, \$3.00;  $4\frac{1}{2}$  in. Compass, with Fixed Needle and Pen Point.
- No. 32, \$3.60;  $4\frac{1}{2}$  in. Compass, with Pen and Pencil Points, and Fixed Needle Point.



- No. 33, \$4.25;  $4\frac{1}{2}$  in. Compass, with Pen, Pencil and Needle Point
- No. 34, \$2.25; Spring Bow Pen.
- No. 35, \$3.00; Spring Bow Pen, with Pencil Point.

We recommend the above tools for small and rapid work

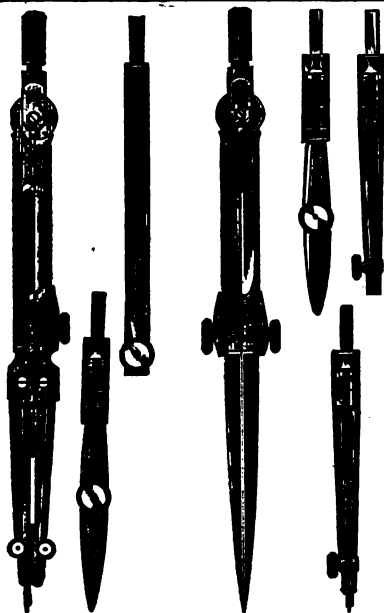


FIG. 1660. NO. 36. FIG. 1661. NO. 37.  
No. 36, Fig. 1660; price, \$5.00. Compass, 6 in. long; with Pen and Pencil Points, Lengthening Bar, and Fixed Needle Point.

No. 37, Fig. 1661; price, \$5.75. Compass, 6 in. long; Pencil, Pen and Needle Points and Lengthening Bar.

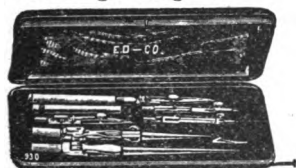


FIG. 1662. NO. 38.

This Set contains Ruling Pen No. 84, 4 in.; No. 26, Plain Divider; No. 33 Compass, and Box of Leads. Price, \$7.50.

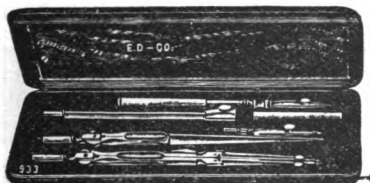


FIG. 1663. NO. 39.

Contains Ruling Pen, No. 87, 5½ in.;

No. 27, Plain Divider, 6 in.; No. 36, Compass, 6 inch, Box of Leads. Price, \$9.00.

All Superior German Compasses and Dividers are fitted with Pivot Joints.

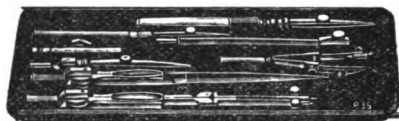


FIG. 1664. SET NO. 40. Price, \$10.50.

Set No. 40 contains Ruling Pens Nos. 73 and 74; Spring Bow Pen, 3¼ in.; Plain Divider, No. 27; Compass, No. 36; Box of Leads.

The Spring Bow Pen in this case is not illustrated, but is the same in quality as No. 23 and same style as No. 8.



FIG. 1665. SET NO. 41. Price, \$12.50.

Set No. 41 contains Ruling Pens Nos. 73 and 74; Spring Bow Divider, Pencil and Pen, 3¼ in. each; Hairspring Divider, No. 29; Compass, No. 36; Box of Leads.

This Set is a duplicate of No. 20, except that the instruments are Superior German instead of Swiss, and it is the most popular set we have. The Bow Instruments are the same as in No. 40.

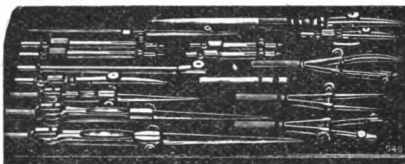


FIG. 1666. SET NO. 42. Price, \$18.25.

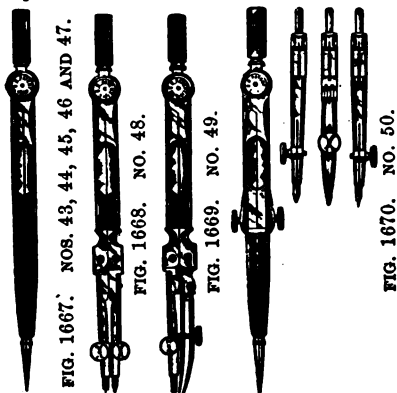
Set No. 42 contains Ruling Pens, Nos. 73 and 87; Spring Bow Divider, Pencil and Pen, 3¼ in. each; Hairspring Divider, No. 29; Compasses, Nos. 33 and 37; Box of Leads.

This is the most complete Set we have, and comprises all the most used instruments. The Bow Instruments in this set are the same as in Sets Nos. 40 and 41. They all have Metal Handles and the quality is first-class.

We can furnish any assortment in Morocco Cases at short notice.

## FINE GERMAN INSTRUMENTS.

These Instruments are next in quality to the Superior German, shown on the preceding pages. They are fitted with a Flat Joint, and will, in many cases, take the place of the higher-priced tools. We recommend them especially to students and mechanics who do not, from the nature of their work, require the more expensive instruments.



- No. 43, \$0.90;  $3\frac{1}{2}$  in. Divider, with Handle  
 " 44, .75; 5 " " " "  
 " 45, 1.00; 6 " " " "  
 " 46, 1.50; 5 " " Hair Spring.  
 " 47, 1.75; 6 " " "  
 " 48, 2.00;  $3\frac{1}{4}$  " Pencil, Fixed Points  
 " 49, 2.00;  $3\frac{1}{4}$  " Pen, " "  
 " 50, 2.50;  $3\frac{1}{4}$  " " Pencil, Need. Pts.

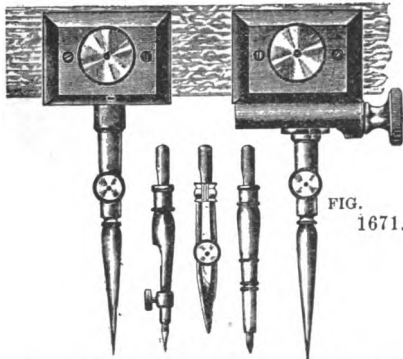


Fig. 1671, Beam Compass, to fit any straight edge; with two Steel Points, Pencil, Pen, and Needle Points. Price, per case, \$6.50.



No. 51, ea. \$2.70; Compass,  $5\frac{1}{4}$  in. with Fixed Needle Pnt, Pen, Pencil, and Lengthening Bar.

FIG. 1672. NO. 51. FIG. 1673. NO. 52. No. 52, each, \$3.00; Compass,  $5\frac{1}{4}$  in., with Pen, Pencil and Needle Points, and Lengthening Bar.



FIG. 1674. NO. 53.

Set No. 53, price \$4.00; contains one Instrument, No. 50; one 4 inch Ruling Pen; one Box Leads.



FIG. 1675. NO. 54.

Set No. 54, price \$4.75; contains one Instrument, No. 44; one Instrument, No. 51; one  $5\frac{1}{4}$  inch Ruling Pen, Jointed; one Box Leads.

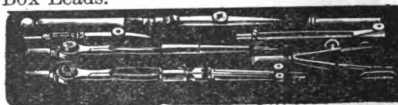


FIG. 1676. NO. 55.

Set No. 55, price \$6.50; is the same as No. 54; with Bow Pen added.

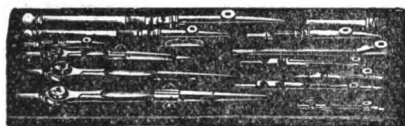


FIG. 1677. SET NO. 56.

Set No. 56 contains one Instrument No. 52; one Instrument No. 50; one Instrument No. 44; one  $5\frac{1}{2}$  in. Ruling Pen, with Joint and Pin; one 4 in. Ruling Pen, with Joint; one Box of Leads; one Key. Price, complete, \$8.50.

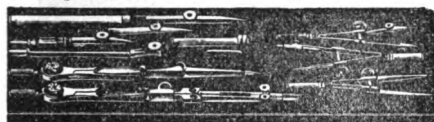


FIG. 1678. SET NO. 57.

Set No. 57 contains one Instrument No. 51; one Instrument No. 46; one Steel Bow Divider; one Steel Bow Pencil; one Steel Bow Pen (all Bows are  $8\frac{1}{4}$  inches long); one  $5\frac{1}{2}$  inch Ruling Pen, with Joint and Pin; one 4 inch Ruling Pen, with Joint; one Box of Leads; one Key. Price, complete, \$9.50.

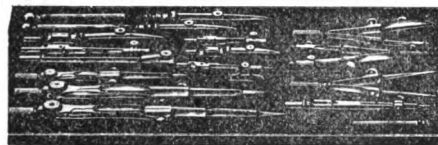


FIG. 1679. SET NO. 58.

Set No. 58 contains one Instrument No. 52; one Instrument No. 50; one Instrument No. 46; one Steel Bow Divider; one Steel Bow Pencil; one Steel Bow Pen (all Bows are  $3\frac{1}{2}$  inches long); one  $5\frac{1}{2}$  in. Ruling Pen, with Joint and Pin; one 4 inch Ruling Pen, with Joint; one Box of Leads; one Key. Price, complete, \$12.50.

#### GERMAN INSTRUMENTS.

We show here a grade of German Instruments similar in pattern to the fine German Instruments just described, but they are carried only in sets. Their low price and fair quality make them very desirable sets for those who cannot or do not care to buy the more expensive ones. They are used a great deal in school work, and are much better than any of the brass instruments that are made and usually sold for this purpose.



FIG. 1680. SET NO. 59.

Set No. 59 contains one  $3\frac{1}{2}$  in. Compass, with Pencil and Needle Point; one 4 inch Ruling Pen; one Box of Leads; one Key. Price, \$3.25.



FIG. 1681. SET NO. 60.

Set No. 60 contains the same Instruments as No. 59, with the addition of one  $3\frac{1}{2}$  inch Plain Divider. Price, \$3.75.

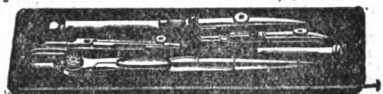


FIG. 1682. SET NO. 61.

Set No. 61 contains one  $5\frac{1}{2}$  inch Compass, with Pencil and Pen Point only; one  $5\frac{1}{2}$  inch Ruling Pen; one Box of Leads and Key. Price, \$2.75.



FIG. 1683. SET NO. 62.

Set No. 62 contains the same Instruments as No. 61, with the addition of one 5 inch Plain Divider. Price, \$3.10.



FIG. 1684. SET NO. 63.

Set No. 63; same as No. 62 with addition of Lengthening Bar, and one  $5\frac{1}{2}$  inch Compass. Price, \$3.50.

All sets are shown without covers to save space, but each set comes in a nice case with cover, as shown in Figs. 1663 and 1663.

THIS BOOK is copyrighted and we caution all parties against using, without our written permission, any of the original matter contained herein.

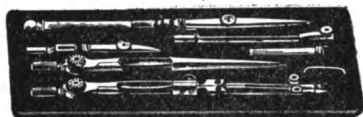


FIG. 1685. NO. 64.

No. 64 contains one Compass with Fixed Needle Point and Pencil, Pen Points and Lengthening Bar; one 5 inch Plain Divider; one  $5\frac{1}{2}$  inch Ruling Pen, with Joint; one Box Leads and Key. Price, \$3.70.

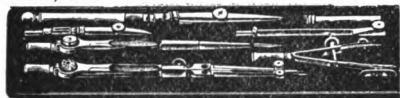


FIG. 1686. NO. 65.

No. 65 is the same as No. 64, with the addition of one  $3\frac{1}{2}$  inch Spring Bow Pen. Price, \$4.75.

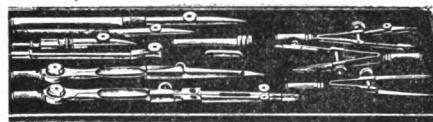


FIG. 1687. NO. 66.

No. 66 contains one  $5\frac{1}{2}$  inch Compass, Fixed Needle Point and Pen, Pencil, and Lengthening Bar; one 5 inch Hairspring Divider; one Steel Spring Bow Divider,  $3\frac{1}{2}$  in.; one Steel Spring Bow Pencil,  $3\frac{1}{2}$  in.; one Steel Spring Bow Pen,  $3\frac{1}{2}$  in.; one Ruling Pen, with Joint, 4 in.; one Ruling Pen, with Joint, 5 in.; one Box Leads and Key. Price, \$8.50.

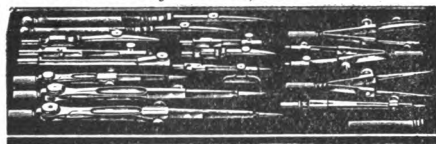


FIG. 1688. NO. 67.

No. 67 contains the same instruments as No. 66, with the addition of one  $3\frac{1}{2}$  in. Compass, with Pencil, Pen and Needle Point. Price, \$10.50.

#### NICKEL PLATED SCHOOL INSTRUMENTS.

This line of low-priced Instruments is a great improvement over the French Instruments, almost universally sold for this purpose. Carried only in sets.



FIG. 1689. NO. 68.

No. 68 contains Compass,  $4\frac{1}{2}$  in., with Pencil and Pen Points, Key and Lead Box Price, \$0.85.

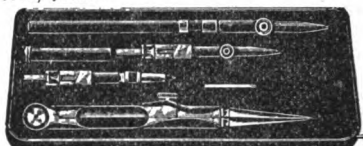


FIG. 1690. NO. 69.

No. 69 contains Compass,  $5\frac{1}{2}$  in., with Pencil and Pen Points, and Ruling Pen Price, \$1.35.

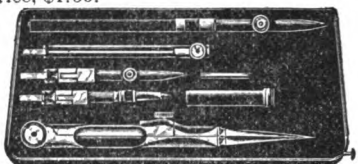


FIG. 1691. NO. 70.

No. 70; same as No. 69, with addition of Lengthening Bar. Price, \$1.70.

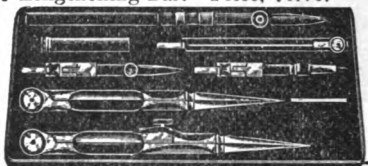


FIG. 1692. NO. 71

No. 71 contains  $5\frac{1}{2}$  in. Compass, with Pen and Pencil Points, Lengthening Bar,  $4\frac{1}{2}$  in. Dividers, Ruling Pen, Leads, etc. Price, \$2.00.

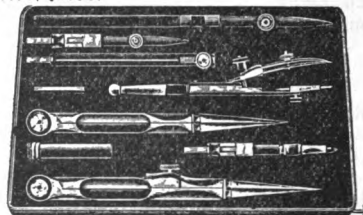
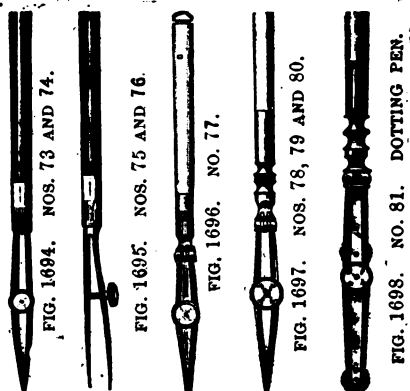
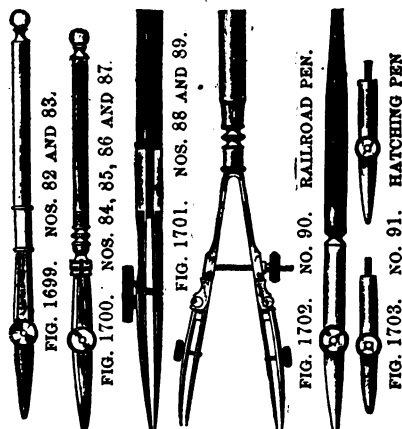


FIG. 1693. NO. 72.

No. 72 contains same Instruments as No. 71, with the addition of Spring Bow Pen. Price, \$3.00.



- No. 73, \$1.00; Ebony Handle,  $4\frac{1}{2}$  in. long.  
 " 74, 1.10; " " 5 " "  
 " 75, 1.15; " " 4 " "  
 " 76, 1.25; " " 5 " "  
 " 77, 1.40; Ivory " 4 " "  
 " 78, 1.60; " H'dle,  $4\frac{1}{2}$  in., with Pin.  
 " 79, 1.80; " 5 " "  
 " 80, 2.00; " 6 " "  
 " 81, 2.45; " " 6 " 6 Wheels.



- No. 82, \$0.40; 4 in. long, no Joint.  
 " 83, .45; 5 " "  
 " 84, .70; 4 " " Fine Joint.  
 " 85, .75;  $5\frac{1}{2}$  " "  
 " 86, .80;  $4\frac{1}{2}$  " " " "with Pin.  
 " 87, .90;  $5\frac{1}{2}$  " " "  
 " 88, 1.20; 5 " " For long lines.  
 " 89, 1.40; 6 " "  
 " 90, 2.25;  $5\frac{1}{2}$  " " Both Pens Joint'd  
 " 91, 1.65; 6 " " 3 Pens to 1 H'dle

## DRAWING PAPERS.

**DETAIL PAPER** is made cold-pressed with slightly grained surface. Will stand a fair amount of erasing, and take pencil or India ink drawings very nicely. Full rolls weigh from 100 to 120 lbs.

**BUFF PAPER** is as its name implies, Buff in color. Is especially intended for preliminary and general drawings. In working on this color, it does not tire the eyes. It will also admit of a great deal of handling, without soiling or cracking, and stand erasing perfectly. Full rolls weigh from 30 to 35 lbs.

**GENERAL**—The color of this Paper is white, and of the same quality as the Buff. Used largely for general office and school work.

**PEERLESS**—This is our best grade of Paper, white in color, with a surface commonly known as Egg-shell. These Papers are so well known that further description is unnecessary.

**BLUE PRINT PAPER**—We carry in stock the Prepared and Unprepared of the very best quality.

**TRACING CLOTH AND PAPER**—Both of these are the very best goods we can buy, and always uniform in quality.

**MOUNTED PAPERS**—We carry in stock the General and Peerless grades, Mounted on Muslin.

Kinds.	Width, Inches.	Per Yd.,	10 Yd. Roll,	In Rolls, about	Per Lb.
Detail,	36	\$0.10	\$0.75	100 lbs.	\$0.12
"	48	.12	.90	100 "	.12
Buff,	36	.15	1.21	30 "	.25
"	62	.30	2.30	40 "	.25
General,	36	.22	1.80	30 "	.35
"	62	.35	3.00	40 "	.35
Peerless,	36	.35	2.85	40 "	.45
"	58	.45	4.20	40 "	.45
General	36	.80	6.50		
Mounted,	36	1.20	10.25		
Peerless,	36	1.00	7.85		
Mounted,	58	1.40	11.75		

## PREPARED BLUE PRINT PAPER.

SOLD ONLY IN FULL ROLLS.

Width, Inches,	24	27	30	36	42
10 Yd. Rolls, ea.	\$0.90	1.00	1.15	1.30	1.60

## TRACING CLOTH.

Width-Inches,	30	36	42	54
Price, per Yd.,	\$0.35	\$0.40	\$0.50	\$0.75
24 Yd. Rolls,	6.20	6.85	9.45	13.50

**TRACING PAPER**—Owing to the great variety we have not listed them. Will send small Sample Book of all kinds of Paper upon receipt of 3c for postage.

## SUPPLIES.

On the following pages we list our line of Draughtsmans' Supplies, which, like our Instruments, embraces only the most used and essential. All of this line is selected with especial care as to quality, and in each class we aim to have the best.

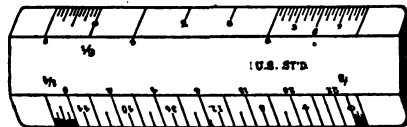


FIG. 1704. DRAUGHTSMANS' FLAT SCALE.

Fig. 1704 represents the most common form of Flat Scales. These are made of boxwood, and divided  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$  and 1 inch to the foot, U. S. Standard Length, in. 6 12 18 24  
Price, each, \$0.35 \$0.50 \$1.00 \$1.50

This style of Scale is also made divided  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $1\frac{1}{4}$  and 3 inches to the foot. Prices same as above.

We can also furnish the above style of Scale with white edges, which are very desirable, as the divisions are much more easily read.

## PRICES OF WHITE EDGED SCALES.

Length, in. 6 12 18 24  
Price, each, \$0.85 \$1.25 \$2.25 \$3.00

## FLAT ENGINEERS' SCALES.

These Scales are divided into 10ths, as follows: 10x50, 10x30, 20x40, 30x60, 40x80, 50x100, and 80x100 parts to the inch. These are made 6 and 12 inches long only, with either plain or white edges. Prices same as above for corresponding kind.

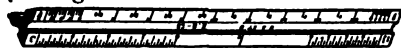


FIG. 1705. TRIANGULAR SCALES.

Triangular Scales are too well known to need any further description. They are graduated  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 1,  $1\frac{1}{2}$ , and 3 inches to the foot, and on one edge to 16ths of an inch.

No. 1, 6 inches long, \$0.90 each; Plain Boxwood.

No. 2, 12 inches long, \$1.25 each; Plain Boxwood.

No. 3, 12 inches long, \$2.70 each; with White Edges.

No. 4, 12 inches long, \$2.70 each; Metallic.

The above Scales graduated for Engineers' use at the same prices as their corresponding kinds.

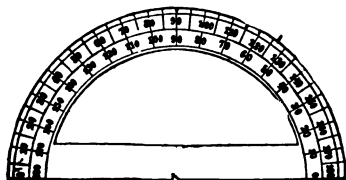


FIG. 1706 PROTRACTOR.

No.	Each.	Diam.	Divisions.	Kinds.
1	\$0.15	$4\frac{1}{2}$ in.	1 deg.	Horn.
2	.30	$6\frac{1}{2}$ "	$\frac{1}{2}$ "	"
3	.10	$3\frac{1}{2}$ "	1 "	Brass.
4	.50	$5\frac{1}{2}$ "	$\frac{1}{2}$ "	"
5	.60	$4\frac{1}{2}$ "	1 "	Germ. Silver
6	1.10	$6\frac{1}{2}$ "	$\frac{1}{2}$ "	"
7	1.60	$4\frac{1}{2}$ "	1 "	"
8	2.75	6 "	$\frac{1}{2}$ "	"
9	5.25	8 "	$\frac{1}{2}$ "	"

## CURVES.

## TRANSPARENT AMBER CURVES.

These are fast coming into general use, as their transparency is very advantageous for the class of work for which they are designed. They are much cleaner to handle, and are tougher than wood.

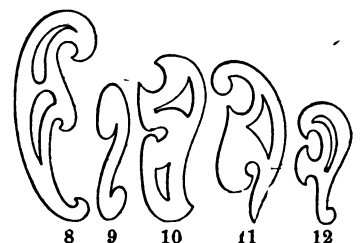
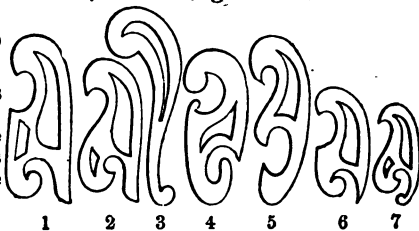


FIG. 1707. WOOD AND AMBER CURVES.

No.	1	2	3	4	5	6
Wood, each,	\$0.35	.30	.35	.35	.35	.30
Amber,	.65	.50	.65	.65	.65	.60
No.	7	8	9	10	11	12
Wood, each,	\$0.25	.35	.25	.35	.35	.35
Amber,	60	1.00	.40	.70	.65	.50



FIG. 1708. STRAIGHT EDGE.

These are all made of Mahogany and Ebony lined.

L'gth, inches, 24 30 36 48 60 72  
Square Edge, \$0.50 .60 .70 1.20 1.40 1.65

## T SQUARES.

We carry in stock such Squares as meet the most general demand. Can furnish various other kinds and qualities. Our Squares are of two classes; Plain and Swivel Head, lined and unlined. They are made of three different kinds of woods, viz: Cherry, Ash and Mahogany.

The Ash Squares are lined with Maple and have Walnut heads; the Mahogany are lined with Ebony, and are the best Squares for general use, as they are less liable to warp or get out of shape.

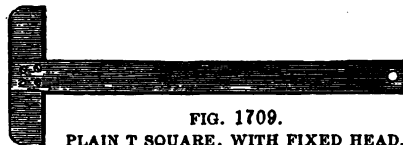
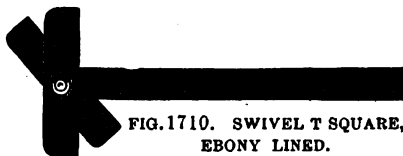


FIG. 1709.

PLAIN T SQUARE, WITH FIXED HEAD.

FIG. 1710. SWIVEL T SQUARE,  
EBONY LINED.

## PRICES OF PLAIN T SQUARES.

L'gth, inches,	15	18	21	24	30
Cherry, ea.	\$0.23	\$0.25	\$0.30	\$0.35	\$0.40
Ash, "	.30	.35	.45	.55	.65
Mahog'y"	.45	.55	.65	.75	.85
L'gth, inches,	36	42	48	60	
Cherry, ea.	\$0.50				
Ash, "	.80	\$1.00	\$1.20	\$1.60	
Mahog'y"	1.00	1.20	1.35	1.75	

## PRICES OF SWIVEL T SQUARES.

L'gth, inches,	15	18	21	24	30
Cherry, ea.	\$0.55	\$0.70	\$0.75	\$0.80	\$0.90
Mahog'y"	.80	.90	1.00	1.20	1.35
L'gth, inches,	36	42	48	60	
Cherry, ea.	\$1.00				
Mahog'y"	1.50	\$1.70	\$1.90	\$2.40	

We can furnish T Squares lined with Transparent Amber, but the long strips are apt to warp and we do not consider them very reliable.

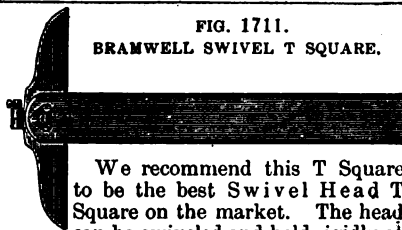


FIG. 1711.

BRAMWELL SWIVEL T SQUARE.

We recommend this T Square to be the best Swivel Head T Square on the market. The head can be swiveled and held rigidly at any point of angle. They have a mahogany blade, ebony lined.

L'gth, 24 30 36 42 48 60 72  
Each, \$2.00 2.25 2.50 2.75 3.00 3.50 4.00

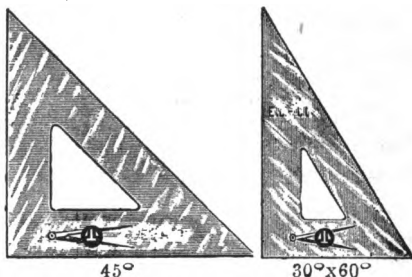


FIG. 1712. JOINTED WOOD TRIANGLES

We carry in stock Triangles, made in the same kinds of wood as the T Squares described in opposite column.

## TRANSPARENT AMBER TRIANGLES.

These are fast taking the place of the Rubber and Wooden Triangles previously sold, as they are cleaner to handle, tougher in material and are transparent, which is very advantageous for general use. Their value can only be appreciated by using them.

## PRICE LIST OF 45° TRIANGLES.

Size, In.	Cherry.	Mahogany.	Amber.
5	\$0.17	\$0.35	\$0.50
7	.22	.45	.75
9		.60	1.00
10	.30	.70	1.20
12		.85	1.75
14		1.10	2.20
16		1.50	2.80

## PRICE LIST OF 30° x 60° TRIANGLES.

Size, In.	Cherry.	Mahogany.	Amber.
5	\$0.15	\$0.30	\$0.35
7	.20	.40	.55
9	.25	.50	.70
10	.28	.60	.80
12	.30	.75	1.20
14		1.00	1.60
16		1.20	2.00

## THUMB TACKS.



FIG. 1713. ROUND. FIG. 1714. BEVELED.

The above represent our best Thumb Tacks. These are hand-made, of German Silver, having hardened steel points of proper length and thickness. They are screwed into the heads and riveted; will not break or bend easily. The heads of these Tacks are very thin, which will be of advantage in using the T square.

ROUND HEADS.			BEVELED HEADS		
No.	Per Doz.	Diam.	No.	Per Doz.	Diam.
No. 1	\$0.60	$\frac{1}{4}$ in.	No. 5	\$0.60	$\frac{1}{4}$ in.
" 2	.75	$\frac{3}{8}$ in.	" 6	.75	$\frac{3}{8}$ in.
" 3	.90	$\frac{1}{2}$ in.	" 7	.90	$\frac{1}{2}$ in.
" 4	1.25	is made from solid steel, $\frac{1}{2}$ inch in diameter.			

## THUMB TACKS WITH RIVETED STEEL POINTS.

These Tacks are not equal in quality to our best, but are very good. Furnished with Round or Beveled Heads.

GERMAN SILVER.			BRASS.		
No.	Per Doz.	Diam.	No.	Per Doz.	Diam.
No. 1	\$0.25	$\frac{1}{4}$ in.	No. 4	\$0.15	$\frac{1}{4}$ in.
" 2	.30	$\frac{3}{8}$ in.	" 5	.25	$\frac{3}{8}$ in.
" 3	.50	$\frac{1}{2}$ in.	" 6	.35	$\frac{1}{2}$ in.

## PUNCHED STEEL TACKS.

These Tacks are made of Punched Sheet Steel, and are meeting with great favor. Their chief recommendation is the low price at which they are sold.

No.	Per 100.	Per Doz.	Diam.
No. 1	\$0.50	\$0.08	$\frac{1}{4}$ in.
" 2	.70	.10	$\frac{3}{8}$ in.
" 3	1.00	.12	$\frac{1}{2}$ in.

We can furnish the above style Tacks with covered heads (protecting the thumb from injury in case the points should accidentally break off and push through), at the following prices. These also are better finished and Nickel Plated:

No.	Per Gross	Per Doz.	Diam.
No. 1	\$0.90	\$0.10	$\frac{1}{4}$ in.
" 2	1.10	.15	$\frac{3}{8}$ in.
" 3	1.40	.20	$\frac{1}{2}$ in.

FIG. 1716. THUMB TACK LIFTER. 26¢ each.

FIG. 1717. FIG. 1718.  
Fig. 1717, \$0.15 each; Pl'n Horn Centers.  
" 1718, 50¢ Silver Rim

FIG. 1719:

## DRAWING INK.

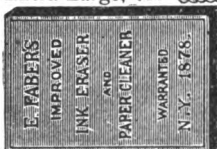
The use of Liquid India Inks has to a great extent superseded the old Stick form, and we believe it is more desirable for general use.

Higgins' Inks are made in two classes, viz: Water Proof and General. The Water Proof Ink is the best to use when drawings are apt to get damp or wet, as it will not run or blur. The General Ink is used for regular office drawings, and is made in various colors, viz: Carmine, Scarlet, Vermillion, Brick-red, Blue, Green, Violet, Indigo, Brown, Yellow and Orange.

Price per bottle, any color, \$0.25; per doz., \$2.50. To dilute the Black inks, use distilled water, with a little aqua ammonia, four drops to the ounce of water. To dilute Colored inks, use distilled water only. Never add any acid or mix with other Inks.

## ERASERS FOR PENCIL AND INK.

Size.	Each.
Small,	\$0.10
Medium,	.16
Large,	.20
Extra Large,	.40

FIG. 1721.  
INK ERASER.

Size.	Each.
Small,	\$0.05
Medium,	.10
Large,	.20



FIG. 1722.

Each, \$0.06	\$0.10	\$0.15
Size, Small,	Medium,	Large,

## PENCILS.



FIG. 1723.

FIG. 1724.

FIG. 1725.

Fig. 1723, Artist's Pencils, per doz. \$1.00, each, 10 cts.

Fig. 1724, Siberian Leads,  $\frac{1}{2}$  doz. in box, 65 cts.

Fig 1725, Artists' Holder; No. 1, as shown, 25c each, No 2, Double Pointed, 35 cts each

The A W Faber Pencils and Leads are generally conceded to be the best goods of this class made. We carry these in stock in thirteen different grades, as follows: 6-B (very soft and very black), 5-B, 4-B, 3-B (soft and black), 2-B, B, HB (medium), H, 2-H, 3-H (quite hard), 4-H, 5-H, 6-H (very hard).

All grades are the same price

## BLUE PRINT FRAMES.

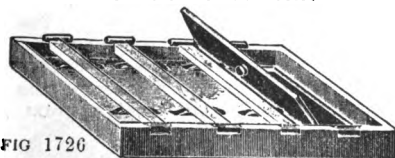


FIG 1726

These Blue Print Frames are made of Hardwood and nicely finished, have Brass Mountings. With or without Felt Cushions or Polished Plate Glass.

No.	Size.	Frame only	With Felt Cush	With Pol. Pl. Glass
100	18 x 22	\$6 13	\$8 23	\$10.96
101	20 x 24	6 58	9 07	12 71
102	24 x 30	7 88	11 76	17 08
103	30 x 42	10 50	17 08	29 40
104	36 x 60	19 25	30 52	58 49

## BATH TRAYS FOR BLUE PRINT FRAMES

These are zinc trays with drain pipes; strong wired rim and hardened braces.

No.	110	111	112	113	114
Size,	18x22	20x24	24x30	30x42	36x60
Each,	\$3.43	\$3.96	\$4.73	\$6.30	\$8.40

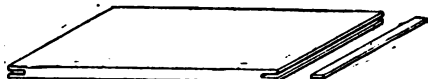


FIG. 1727a.

## STEEL-RIBBED DRAWING BOARD.

These Boards are well made, of selected white pine, only the choicest stock being used. Are made in the following sizes:

12x18	\$1.50	32x54	\$5.00	28x41	\$4.00
19x25	2 00	16x21	1 75	42x60	6 00
25x37	3 00	23x21	2 50		

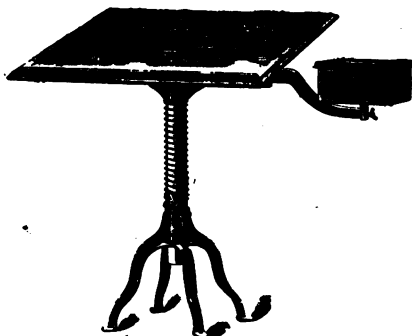


FIG 1728a

## MORSE DRAWING TABLE, STYLE "B" WITH ATTACHMENT NO. 4.

The Universal Drawing Tables made by the Morse Machine Co. are furnished in a great variety of styles and sizes. We will be pleased to send catalogue showing illustrations and giving prices of the different sizes. The cut shows style "B" with Attachment No. 4, size of top 30x36 inches. This is the most popular size and style; price \$16.50, other styles and sizes ranging in price from \$10.00 to \$40.00.

## PLUMB BOBS.

Until quite recently, the only Plumb Bobs that were offered for sale were the common cast iron and lead, and perhaps two sizes of cast brass, all very indifferently made as regards finish or accuracy. Within the past few years, however, there has been quite an "epidemic" of new makes—many of them good. We have

selected, out of the different kinds we have handled, those which we consider superior.

Although we carry in stock and sell the cheap Bobs, ranging in price from ten to thirty-five cents, we have not deemed it necessary to illustrate and price them.

Fig. 980 shows a good low priced Plumb Bob, made of cast brass with a steel point; is well finished

FIG. 980  
No. 5, \$0.45, 6 oz.; No. 6, \$0.65, 11½ oz

## LAMP PLUMB BOB

The Lamp Plumb Bob, Fig. 981, priced below, was originally made in two or

three sizes, especially for millwright's use, and to the best of our knowledge, was the first good Plumb Bob made for general sale, manufactured of the best cast bronze,

has long steel point fitted in tapering hole through the body, and held by a cap, as shown

These Bobs are furnished in quite a variety of sizes, to suit all tastes and purposes

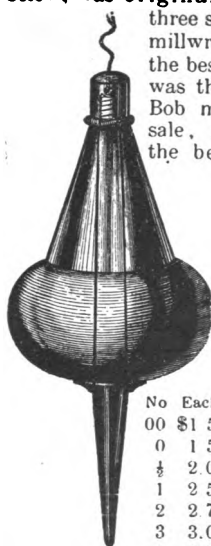


FIG. 981

No	Each	Weight	Diam
00	\$1.50	10 oz	1½
0	1.50	1 lb	1½
½	2.00	1 " 8 "	2½
1	2.50	2 "	2½
2	2.75	2 " 4 "	2½
3	3.00	2 " 10 "	2½
4	3.25	3 " 2 "	2½
5	3.50	3 " 8 "	2½
6	4.00	4 " 4 "	3



FIG. 982. MERCURY PLUMB BOB.

This, in our judgment, is altogether the finest Plumb Bob ever placed upon the market. It is made of steel, bored out and filled with mercury or quick-silver. Mercury being from 60 to 70 per cent heavier than brass or steel, it makes the Bob unusually heavy in proportion to its size, and the center of gravity low. The comparatively small diameters allow it to be used close to corners and walls, and render it less easily affected by drafts of air. The points are hardened, and the bodies and points are ground. These Plumb Bobs are nickel plated, and each is furnished with a braided silk line.

3½ oz.	\$0.90,	4 in. long,	¼ in. diam.
6 "	1.35,	4½ "	½ "
12 "	1.80,	5½ "	¾ "
1 lb.	2.25,	6 "	1 "
2 "	3.25,	7 "	1½ "
3 "	4.00,	8 "	1¾ "
4 "	4.75,	9½ "	1½ "

As a means of comparison, we might say that the No. 3 Lamp Plumb Bob (Fig. 981) measures 6½ inch in length; the No. 6, 7½ inch in length.

## LINES AND CORD

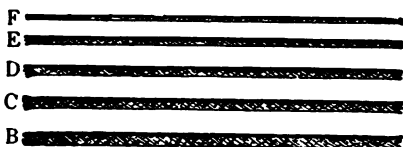


FIG. 983

The most difficult feature in describing lines is to give an adequate idea of the different diameters or thicknesses. The material being yielding it is next to impossible to measure them. In the above cut we attempt to give an idea of the various sizes, but the cut is only approximately correct.

## BRAIDED SILK AND LINEN LINES.

Our Braided Silk Lines are made of pure silk; they cost about one-half more than

the "raw" silk and are well worth the difference. They come 25 yards on a board; can furnish 100 yards in one piece. The Linen Lines also are the best quality.

Size,	B	C	D	E	F
Silk, 25 yds,	\$0.90	.75	.60	.50	.40 cts.
Linen, "	.30	.30	.25	.25	.20 "

Price on Silk and Linen Lines include postage.

#### BRAIDED LINEN LINES.

We also carry in stock Hard Braided Linen Lines, in coils of 50 yards, these are slightly heavier than the regular lines. We can furnish, if required, 1,000 feet in one continuous length. Price, per coil, all sizes, 60 cts.

#### COTTON MASONS' LINES.

The Mason's Line is a twisted line, and comes in 100 feet hanks. We have two sizes Nos. 6 and 8; the No. 6 is about  $\frac{1}{4}$  inch in diameter and the No. 8 about  $\frac{3}{8}$  inch. No. 6, per hank, 20 cts., per doz., \$2.00  
" 8, " " 30 " " " 3.00

#### BRAIDED CORD AND ROPE.

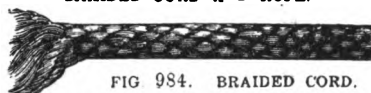


FIG 984. BRAIDED CORD.

The Braided Cord we carry both in Cotton and Linen, the Linen Cord being used where greatest strength and wearing qualities are essential.

The "B" quality Cotton Cord is the most generally sold, although, in our judgment, the "A" quality is more desirable, being made of finer stock and more closely woven. All sizes up to No. 12 come in 100 feet hanks; larger sizes, in 500 feet coils. The prices given below are on 100 feet lengths, but we sell any quantity, small or large

	PRICE PER 100 FEET.					
No.	6	7	8	9	10	12
Diam.,	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$
B Cot'n,	\$0.50	.60	.75	.85	1.10	1.35
A "	.65	.80	1.00	1.15	1.45	
Linen,	.95	1.15	1.40	1.60	2.15	2.70

#### CORD GRIP.



The Cord Grip is a substitute for the knot used in hanging sash cord, it will not untie and makes quite a saving in cord. By using the larger sizes for the



FIG. 985. CORD GRIP.

smaller cord they can also be used for splicing in an end, such as would be necessary in the formation of a loop.

No. 8, dozen, 20 cents; gross,	\$1.75
" 12 " 30 " "	3.00
" 16 " 35 " "	3.50

Will be pleased to name prices or furnish information in reference to Manila, Sisal and Hemp Ropes in all sizes and dimensions.

#### BRAIDED AWNING LINES.

The following Lines, although known as Awning Lines, are used by Masons, Upholsterers, and for all purposes where a fine, strong line is required. They are put up in hanks of 48 feet each.



FIG. 986.

No.	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$
Diameter,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
Cotton, each,	\$0.15	\$0.20	\$0.25
" dozen,	1.50	2.00	2.50
Linen, each,	.25	.35	.45
" dozen,	2.50	3.50	4.50

We also have this cord in size No. 5, which measures  $\frac{1}{2}$  inch in diameter; it comes in 100 feet hanks. Price, per hank, 75 cts.; per dozen, \$7.50.



FIG. 987. WIRE SASH CORD.

The above cut of Wire Sash Cord is the very best one we could get, and while it is not perfect it will show or give a fair idea of the Cord, which is made of fine wire twisted as an ordinary rope. It is very soft and pliable, and will prove very useful for a great variety of purposes.

Diameter.	Tinned.	Copper
$\frac{1}{4}$ inch, per ft.,	2 cents;	4 cents.
$\frac{1}{8}$ " " "	2 $\frac{1}{2}$ " "	3 $\frac{1}{2}$ " "
$\frac{3}{8}$ " " "	3 $\frac{1}{2}$ " "	8 " "
$\frac{1}{2}$ " " "	4 $\frac{1}{2}$ " "	10 " "

We can also furnish the above Rope in galvanized or plain iron wire.

## GAUGES.

All of the following Marking Gauges have an Adjusting Point of finely tempered steel, which may be readily removed and sharpened. The point can be thrust down as it wears away, or should it become broken, can easily be replaced.

All Gauges with Brass Thumb Screws have also a Brass Shoe inserted in the head under the end of the thumb screw; this shoe protects the gauge bar from being dented by the action of the screw, and the broad surface of the shoe holds the head more firmly in position, with less wear of the screw thread.

### MARKING GAUGES.



FIG. 3735. STYLE NO. 65.

No. 62, \$0.09, Beech, Polished, Boxwood Thumb Screw.

No. 64, \$0.13, Beech, Polished, Plated Head, Boxwood Thumb Screw.

No. 65, \$0.23, Boxwood, Polished, Plated Head, Brass Thumb Screw and Shoe.

No. 66, \$0.27, Rosewood, Oval Plated Head and Bar, Brass Thumb Screw and Shoe.

### DOUBLE GAUGES.

(Marking and Mortise Gauge combined.)



FIG. 3736. STYLE NO. 71.

No. 71, \$0.40, Beech, Polished, Plated Head and Bars, Brass Thumb Screw and Shoes.

No. 72, \$0.20, Beech, Polished, Boxwood Thumb Screw.

No. 74, \$0.70, Boxwood, Polished, Full Plated Head and Bar, Screw Slide, Brass Thumb Screw and Shoe.

**WHEN ORDERING** please do not fail to give the Figure Number and Size wanted. Long delays are not infrequent when the proper sizes and kinds are not specified—this is important.



FIG. 3737.

MORTISE OR MARKING GAUGE.  
STYLE NO. 77.

No. 77, \$0.42, Rosewood, Mortise and Marking Gauge, Plated Head, Screw Slide, Brass Thumb Screw and Shoe.

No. 79, \$0.60, Rosewood, Mortise Gauge, Plated Head and Bar, Screw Slide, Brass Thumb Screw and Shoe.

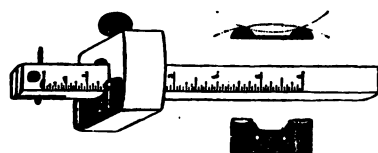


FIG. 3738. IMPROVED GAUGE.

The Brass Face, with two ribs or protections, attached to one side of the gauge-head (see engraving), will enable the owner to run a gauge-line with perfect steadiness and accuracy around curves of any degree, and either concave or convex. The gauge-head is reversible, and the flat side can be used for all ordinary work.

Any of the Gauges from Nos. 62 to 79 in the foregoing lists can be furnished with this attachment at an extra cost of 5 cents. In ordering this style just prefix the number with the figure 1, thus the No. 62 Gauge with this attachment would be No. 162, No. 79 No. 179, etc., etc.



FIG. 3739. SCHOLL'S PATENT COMBINATION GAUGE.

This is an old favorite, having been on the market for upwards of twenty years.

No. 267, \$1.25, Rosewood, 4 bars; 3 bars Marking and 1 Mortise.

No. 268, \$1.15, Rosewood, 3 bars; 2 bars Marking and 1 Mortise.

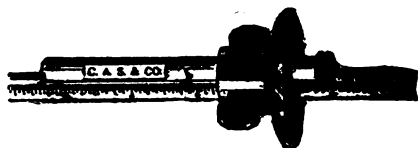


FIG. 3740. BARRETT COMBINATION ROLLER GAUGE.

This Gauge is made entirely of metal, nicely Polished and Nickel Plated, the shorter beam sliding into the head flush when used as a single gauge. Rolls are used in place of a spur; these rolls are made of fine tool steel, and will run over knots and roughness with perfect ease. Price, \$0.70.



FIG. 3741. PANEL GAUGE.

No. 85½, \$0.85, Rosewood, Plated Head and Bar, Brass Thumb Screw and Shoe; about 18 in. long over all.



FIG. 3742. SLITTING GAUGE.

No. 84, \$0.45, Handled Slitting Gauge with Roller; about 18 in. long over all.

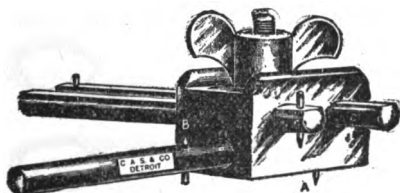


FIG. 3743. BUTT GAUGE.

A very useful tool for hanging doors. Point A, projection through slot in bottom, gives the cut in the rabbet of the door. Point B gives the cut on the door, setting the door the required distance from the stop when hinged. Points C and D in top slides give the depth of hinge in door and the jamb. The gauge gives three independent gauges for general work, also may be used as a mortise gauge. This Gauge is made of Steel, Polished and Nickel Plated. Price, \$0.60.



FIG. 3744. COMBINED GAUGE AND SQUARE.

This tool can be used as an ordinary Marking or Mortise Gauge, but is more especially designed for door-hanging and mortise work. In these operations it takes the place of three ordinary gauges and a square; insuring perfect work and saving time. Is made of steel, nicely nickel plated, light and strong. Price, \$0.80.

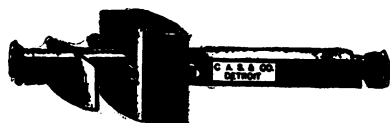


FIG. 3745. BUTT AND RABBIT GAUGE.

This is the most complete combination tool of its class ever placed upon the market; it has two bars, both of brass, one movable within the other, also three blades or markers. A Rosewood head on the outer bar makes the ordinary Marking or Slitting gauge. At one end of the outer bar a steel plate or stop is attached, and in connection with the rosewood head set at a proper distance from the plate, a double head for Mortising is made. Also a superior tool as a Butt gauge, and as a gauge for Rabbets of all kinds. Price, \$1.00.

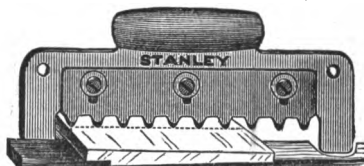


FIG. 3746. ADJUSTABLE CLAPBOARD (SIDING) MARKER.

This tool can be used with one hand while the other is employed in holding the clapboard in position. It will mark a full line across the clapboard exactly over, and conformed to the edge of the corner board. Price, each, \$0.40.

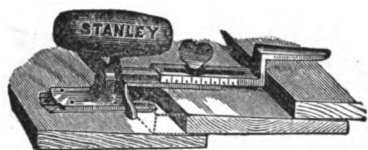


FIG. 3747. ADJUSTABLE CLAPBOARD (SIDING) GAUGE.

In this tool is offered a simple and practical holder. The clapboard to be laid, can be laid any width to the weather, by means of a graduating scale on the tool. A set of 3 Gauges is recommended for laying long clapboard or siding. Price, each, \$0.40.

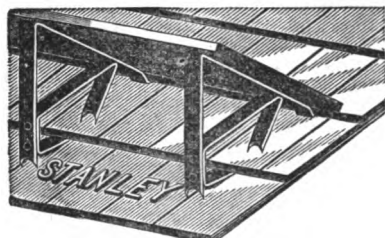


FIG. 3748. PATENT ROOFING BRACKET.

The parts are of spring steel and firmly riveted together. A dozen of these can be placed in position or removed in a minute's time, and great economy in lumber and nails will be found. There are no loose parts to get lost, and no nail holes are made in the roof. 8 in. size, per Doz., \$2.25; each, \$0.23.

## PENCILS.



FIG. 3749. CARPENTERS' PENCIL.

Although a small tool, the Pencil is by no means as insignificant as would appear. It is a hard matter to obtain a first-class Carpenters' Pencil at the ordinary hardware stores or stationers. Our Pencils are of the very best quality, and necessarily high in price. We would suggest to those who prefer first-class Pencils, a trial of ours. They leave a clear, black mark; the lead is of the best quality, medium soft, but strong.

No. 757, Octagon shape, 7 in. long, each, \$0.05; doz., \$0.50; gross, \$5.00.

No. 762, Octagon shape, 12 in. long, each, \$0.08; doz., \$0.75; gross, \$8.00.

## ROUND PENCILS.

We also have the same quality as the above in Round Pencils, each, \$0.04; doz., \$0.40; gross, \$4.00.



FIG. 3750. LUMBER CRAYON.

Although originally intended for marking lumber, these Crayons can be used for all sorts of purposes, and are superior in every respect.

Black, each, \$0.06; doz., \$0.60; gross, \$6.00. Red or Blue, each, \$0.10; doz., \$0.90; gross, \$9.50.

We also have a substance known as Keel, which is a kind of hard, red chalk used for marking lumber. This comes in irregular, oblong pieces from  $\frac{1}{2}$  to 1 inch square, and from 2 to 4 inches long. Price, per lb., \$0.20.

## CARPENTERS' CHALK.

This comes in hemispheres about  $1\frac{1}{2}$  inch in diameter across the flat portion.

White, per doz., \$0.08; per gross, \$0.70. Red or Blue, per doz., \$0.10; per gross, \$1.00.

## SHEARS.

(In our Metal Worker's catalogue, entitled "A Book of Tools" (see page 744 of this catalogue), will be found a very complete line of Metal Shears, including Circular, Dental, Jewelers', Bench and Squaring Shears.)

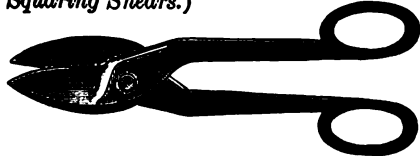


FIG. 3751. TINNERS' SNIPS.

We sell the Tinnern's Snips made by the Peck, Stow & Wilcox Co., and believe that they are altogether the best tools of this class in the market. Prices are lower than they used to be.

No.	6 $\frac{1}{2}$	7	8
Lgth. Cut, in.	4 $\frac{1}{2}$	4	3 $\frac{1}{2}$
Each,	\$2.70	\$2.25	\$1.80
No.	9		10
Lgth. Cut, in.	3		3 $\frac{1}{2}$
Each,	\$1.35		\$1.25

For general use the Nos. 8 and 9 are the best.



## PLIERS AND PINCERS.



FIG. 3753. LODI PLIERS.

These Pliers are made of steel, and are very much superior to the common, cheap German pliers, although this isn't saying much for them. The jaws are not tempered.

Size, in.	4	4½	5	6
Each,	\$0.15	\$0.15	\$0.20	\$0.25
Doz.	1.20	1.40	1.60	2.00

The above prices on single Pliers include postage.



FIG. 3754. PARAGON PLIERS.

These are first-class in all respects; jaws are held together with screw and nut. Pliers are nickel plated, tempered and fully warranted.

Size, in.	4	4½	5	6
Each,	\$0.30	\$0.35	\$0.40	\$0.50
Doz.	2.70	3.15	3.60	4.50

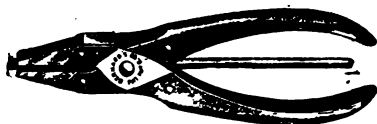


FIG. 3755. BERNARD PLIER.

The Bernard Pliers are very popular; quality is of the very best. An especial feature in the Bernard Pliers is the fact that they are provided with parallel jaws, which make them for most purposes very desirable. We have these in both Flat and Round Nose, prices being alike.

Size, in.	4½	5½	6½	7½
Each,	\$0.50	\$0.65	\$0.85	\$1.10

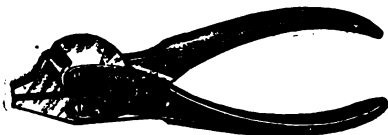


FIG. 3756. BERNARD CUTTING PLIER.

The Combination or Cutting Plier contains the excellent features of the regular pliers, together with the cutting principle.

Size, in.	4½	5½	6½	7½
Each,	\$0.85	\$1.00	\$1.25	\$1.75



FIG. 3757.

## COMBINATION PARAGON PLIER.

This is a very heavy, strong tool; made in one size, 9 inches in length. It is a combination of Plier, Wire Cutter and Hammer; will cut heavy wire, and drive a 20-penny nail. A splendid Carpenters' Tool. Price, \$0.85.



FIG. 3758. BUTTON'S PLIER.

J. M. King & Co. are the original makers of these pliers. There are imitations, but the Pliers made by King are altogether the best. Round Nose Pliers 10 cents per pair extra.

Size, in.	4½	6	8	10
Each,	\$0.45	\$0.40	\$0.55	\$0.65



FIG. 3759. CARPENTERS' PINCERS.

Used principally for drawing small nails and brads, and "Skinnin catfish"; can also be used for other purposes. The quality is of the very best—that is—for Carpenters' Pincers.

Size, in.	6	7	8	10
Each,	\$0.25	\$0.30	\$0.35	\$0.50

## WRENCHES.

We show here a few of the more useful styles of Wrenches for wood workers. In our Metal Workers' Catalogue entitled "A Book of Tools" (see page 744 of this book) we illustrate, price and describe twenty-eight styles of Wrenches in over 200 sizes.

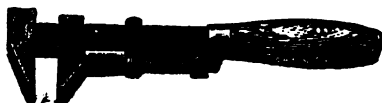


FIG. 3760.

### COES KNIFE HANDLE WRENCH.

This is the most popular high-grade wrench made. While there are a dozen or more good makes of wrenches, we believe that there are more Coes sold than all the others combined. Observe that the Bright wrenches cost but little more than the Black, and for obvious reasons are better.

### PRICE LIST OF COES WRENCHES.

Size, inch.....	6	8	10
Price, Black.....	\$0.45	\$0.50	\$0.65
" Polished.....	.50	.60	.75
Will open.....	$\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$
Size, inch.....	12	15	18
Price, Black.....	\$0.80	\$1.25	\$1.60
" Polished.....	.95	1.45	1.85
Will open.....	$2\frac{1}{2}$	$2\frac{1}{2}$	3



FIG. 3761. STARR WRENCH.

This is an imitation of the old style Coes wrenches. It is what is commonly known as an "Agricultural" Wrench, we presume, from the fact that it is the kind of wrench that the implement manufacturers give away with threshing machines and corn shellers. The less said about quality the better. It is just the wrench for the man who expects to "lose it," or "have it stolen."

### PRICE LIST OF STARR WRENCHES.

Size, in.,	6	8	10	12
Price,	\$0.25	\$0.30	\$0.35	\$0.45

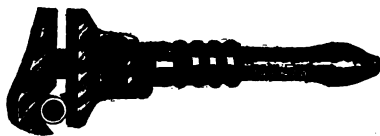


FIG. 3762. COMBINATION WRENCH.

The Bemis & Call Combination Pipe Wrench is a most excellent tool for the carpenter who does general jobbing. These Wrenches are polished and finely finished. They are made of the best material, and parts are interchangeable. They are made with either short or long nut, but we no longer keep the short nut wrenches in stock, as the long sleeve nut is very much superior, and the difference in price is comparatively small.

Takes pipe..... $\frac{1}{2}$  to 1  $\frac{1}{2}$  to  $1\frac{1}{2}$   $\frac{1}{2}$  to  $2\frac{1}{2}$   $\frac{1}{2}$  to 3  
Each.....\$1.70 \$1.90 \$2.70 \$3.40



FIG. 3763.

### THE '97 BICYCLE WRENCH.

The above cut shows the latest and, we believe, the best of the small bicycle wrenches. Drop-forged of solid steel; length,  $4\frac{1}{2}$  in.; weight,  $5\frac{1}{2}$  oz. Black Finish, each, \$0.45; doz., \$5.00. Nickel Finish, each, \$0.55; doz., \$5.65.

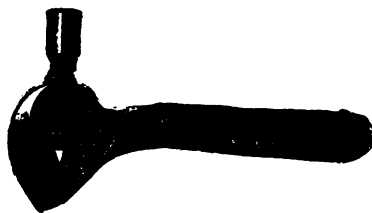
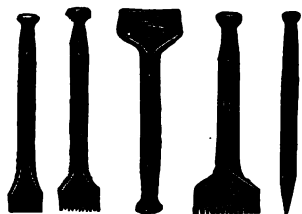


FIG. 3764. HAND RAIL WRENCH.

This tool is designed especially for stair builders; is made of malleable iron, with steel set screw. Price, each, \$0.65.

## STONE AND MARBLE CUTTERS' TOOLS.

We illustrate here a line of the more commonly used Stone Cutters' tools; can furnish a great variety of tools for this class of work, also tools for Granite Cutters, and can furnish to order Special Tools.



No. 2. No. 3. No. 4. No. 5. No. 6.

FIG. 3765. STONE CUTTERS' TOOLS.

- No. 2, Draft Plain.
- No. 3, Draft Tooth.
- No. 4, Drove Plain.
- No. 5, Drove Tooth.
- No. 6, Point.

These tools are from 7 to 9 inches in length. In ordering, state whether for stone or marble. The size given signifies the size of steel bar from which the tools are made. All styles illustrated are the same price.

Size.	Each.	Dozen.
$\frac{1}{2}$ in. bar, $\frac{1}{2}$ to $\frac{1}{4}$ in. wide	.....\$0.15	\$1.25
$\frac{3}{8}$ " " " "	..... .15	1.50
$\frac{1}{2}$ " " " "	..... .20	1.75
$\frac{3}{4}$ " " " "	..... .20	2.00
$\frac{7}{8}$ " " " "	..... .25	2.25
1 " " " "	..... .25	2.50
1 " 1 " 3 " "	..... .30	3.00

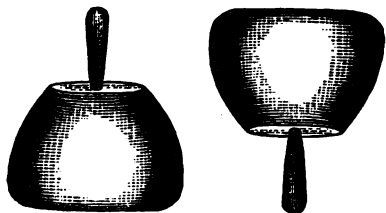


FIG. 3766. STONE CUTTERS' MALLETS.

These are made of best quality second growth hickory, thoroughly seasoned. Price, per lb., \$0.25. Weights from 4 to 7 lbs—6 lb. is the most commonly used size.



FIG. 3767. SLATERS' TOOLS.

Slaters' Hammers, all steel, with leather handles, price, each, \$3.00.

Slaters' Stakes, lengths from 20 to 24 in., graduated, each, \$1.00.

Slaters' Rippers, best quality steel blades, average length 30 in., each, \$2.50.

The Rippers are sold quite largely to Carpenters, for tearing off shingles and ripping off old roofs of all kinds.

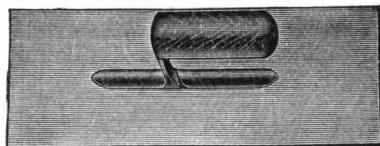


FIG. 3768. PLASTERING TROWEL.

We carry in stock but one style and quality of Plastering Trowels, that is the celebrated Cincinnati Trowel. We are aware that for some purposes the lower priced trowels answer very well, but these can usually be procured at the local stores. Our Trowels are finely finished, have etched blades and walnut handles.

Size, in.	11	11 $\frac{1}{2}$	12	12 $\frac{1}{2}$
Each,	\$1.20	\$1.25	\$1.30	\$1.40

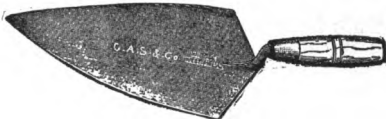


FIG. 3769. BRICK TROWEL.

In Brick as in Plastering Trowels, we carry but the one style, that is the William Rose & Bro. Philadelphia pattern. These trowels are considered far superior to any other make, either foreign or domestic.

Size, in.	10 $\frac{1}{2}$	11	11 $\frac{1}{2}$	12
Each,	\$1.10	\$1.15	\$1.20	\$1.25

### POINTING TROWELS.

These are the William Rose & Bro., and are of the same quality as the Brick Trowels.

Size, in.	5	5 $\frac{1}{2}$	6
Each,	\$0.50	\$0.50	\$0.50

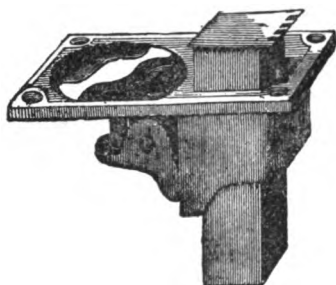


FIG. 3770. WESTON BENCH STOP.

This is an old favorite; it is operated by thumb and finger on the top of the bench, and does not require a hammer or screw driver. Is altogether the most convenient form. The only criticism we have is that the manufacturer does not make it nicely enough.

Price, each, \$0.55.

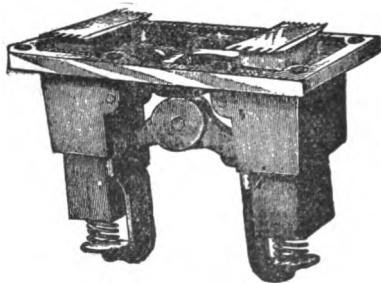


FIG. 3771. DOUBLE BENCH HOOK.

This is in general style the same as the Weston, but better made and fitted; is very easy of adjustment, either one or both hooks can be used at one time. One of its advantages is that a short, broad board can be worked without the necessity of using a tail dog.

Price, \$2.00.

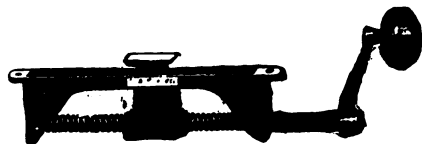


FIG. 3772.

TAIL SCREW AND BENCH DOG.

The advantage of a first-class Tail Screw to a work-bench is apparent, and

the construction of this Tail Screw is such that it can be attached to any bench ready for use in ten minutes. This device is in use in many of the leading furniture factories and planing mills in all parts of the country.

The carriage has a 9 inch movement back and forth in frame; the tooth plate can be raised to any desired height up to 2 inches, or made flush with bench top. It can be used for all ordinary lengths, widths or thicknesses of stuff; is well made, nicely finished and nickel plated. Price, each, \$2.10.

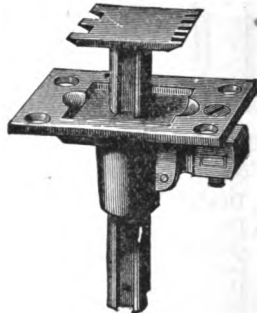


FIG. 3773. NO. 2 BENCH STOP.

In this Stop the working plate is square, one set of teeth fine, the other coarse. The spindle and plate are of steel, the body of malleable iron. It is very durable and useful. Price, \$0.75.



FIG. 3774. PLATE BENCH STOP.

This is a cheap, substantial Stop, easily adjusted on a bench or board. Can be carried about in the tool box to use on odd jobs. Price, each, \$0.15; postage 5 cents.

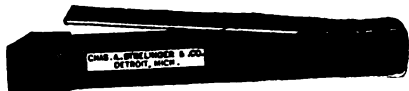
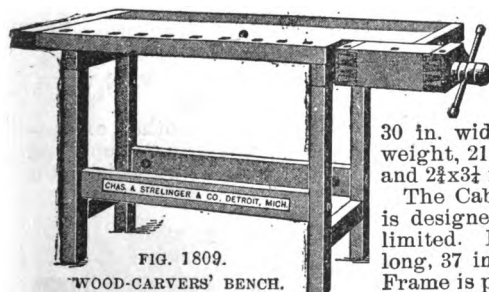
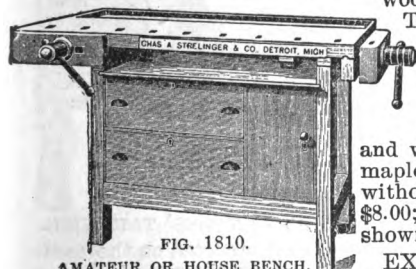


FIG. 3775. GERMAN PATTERN.

This style is sold in limited numbers; they are made of steel throughout, and come in pairs. Price, per pair, \$0.75.

## MECHANICS' AND AMATEURS' WORK BENCHES.

FIG. 1807.  
CABINET MAKERS' BENCH.FIG. 1808.  
CABINET-MAKERS' DOUBLE BENCH.FIG. 1809.  
'WOOD-CARVERS' BENCH.FIG. 1810.  
AMATEUR OR HOUSE BENCH.

We show here a very complete line of Work Benches for Cabinet-makers, Carvers, Amateurs, etc. These Benches are all made in first-class style, glued-up hard maple tops, with legs also of maple. They are all put together with joint bolts, and can be easily taken apart and crated for removal or shipment.

Over one thousand of these have been sold to the different furniture manufacturers in Grand Rapids, Mich. No doubt that furniture manufacturers have excellent facilities for making their own benches if they choose, but by reason of making them in large quantities, the makers of these Benches can furnish them at a less price than they can be made for in small lots.

The Cabinet-makers' Bench, Fig. 1807, is the style most commonly used. The regular Bench, No. 1, is 25 in. wide (with 14 in. maple top), 6½ ft. long, and 34 in. high. Price, \$12.00.

No. 2, style of No. 1, 6½ ft. long by 30 in. wide, 16 in. maple top. Price, \$13.00. Weight, 190 lbs.

No. 3, style of No. 2, 7 ft. long by 30 in. wide, 16 in. maple top. Price, \$14.00; weight, 210 lbs. Above Benches have 2½ in. tops, and 2½x3½ in. legs.

The Cabinet-makers' Double Bench, Fig. 1808, is designed for use in factories where space is limited. Is well adapted for large work; is 17 ft. long, 37 in. wide, with 11 in. pine center in top. Frame is put together with joint bolts instead of wooden keys, as shown in cut. Price, \$20.00.

The Carvers' Bench, Fig. 1809, is 5½ ft. long. Price, \$11.00.

The Amateur Bench, Fig. 1810, was especially designed for use in manual training schools, and we sell a great many of them for gentlemen's and youths' home use. Is strong and well made; width 20 in., with 13 in. glued-up maple top; length 4½ ft. We sell more of these without the drawers and cupboard than with. Price \$8.00; weight 100 lbs. Price, with drawers, etc., as shown in cut, \$12.00.

**EXTRA HEAVY BENCHES**—We think that these Benches are heavy enough for any use, but an occasional customer wants a heavier Bench. Can furnish Fig. 1807 in all sizes, with top ¾ in. thick and 28 in. wide, and legs 3½x3½ in., at \$3.00 extra. Weighs about 100 lbs. more.

**QUICK ACTION VISES**—Can furnish Benches with Vises as in Figs. 3782 to 3786. For price deduct \$1.25 for each Vise, and add price of the Vise selected.

## WOOD WORKERS' VISES.

The type of Wood Workers' Vise represented by Figs. 3782 and 3783 is coming into very general use. Our sales of these have more than doubled every year since their introduction (about eight years ago). For 95 per cent of the work done by Carpenters, Cabinet Makers, Pattern Makers and Wood Workers generally, they are vastly superior to any of the ordinary or regular styles of Bench Vises. In the large Furniture, Organ, Piano, Mantel, Cabinet and Pattern Making, and similar establishments, they have supplanted the regular styles, as well as the common bench vises.

There are many advantageous features in a Vise of this kind, but the principal one is rapidity of action. In either of the two styles shown here, one can put in and take out a dozen pieces of wood, ranging in thickness from  $\frac{1}{2}$  in. to 12 inches, in less than twenty seconds, while with any of the ordinary styles of Screw Vises it would take at least from five to ten minutes.

A customer of ours came into the store the other day, and among other goods ordered a Victor Coach Makers' Vise (Fig. 3787). We showed him the Toles' Vise (Fig. 3782), and as we knew it was much better suited to the kind of work done in his establishment, tried to persuade him to take it instead of the other, but without success. He frankly acknowledged that it was far superior, but said, "We have in our shop over one hundred vises, many of them in good order, some almost new, and if I get one of these, the only contented man in the shop will be the fellow who has this vise, and it would result in our having to buy nearly a hundred new vises." This certainly was a plausible enough argument, but we believe the saving of time (and time is \$\$\$) in using this class of vise—over the ordinary style—would pay for the whole lot in less than six months.

## METAL WORKERS' VISES.

In our Metal Workers' tool catalogue, "A Book of Tools" (see page 744), we illustrate, describe and price a very complete line of Vises, from the little Pin vise, weighing 2 oz., to the heaviest Machinist vise, weighing 250 lbs., 26 styles and 107 sizes in all.

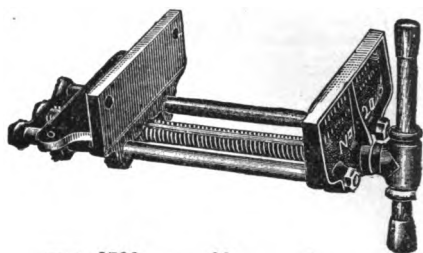


FIG. 3782. NO. 20 TOLES' VISE.

This Vise is, we believe, the best in the market; is strong, well made and well finished. Width of jaws, 10 in.; depth 4 in.; opens 12 in. Price, \$6.50.

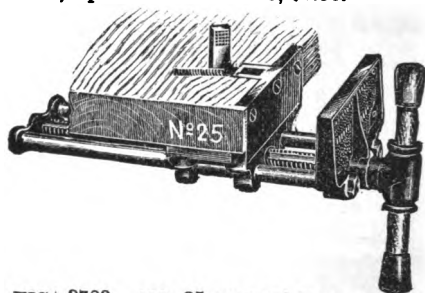


FIG. 3783. NO. 25 TOLES' VISE WITH BENCH STOP.

This is the same as the other, excepting that it is provided with an improved Rapid-Acting Bench Stop, which is a feature of considerable advantage. Price, \$7.00.

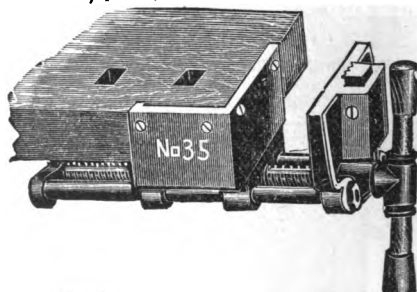


FIG. 3784 NO. 35 TOLES' TAIL VISE.

This Vise is constructed on the same principle as the foregoing. It has a strong dog in the front jaw, with positive adjustment. In many places the Tail Vise will be found a most useful tool. The jaws are 6 in. long,  $3\frac{1}{2}$  in. deep, and open 6 in. Price \$6.00.

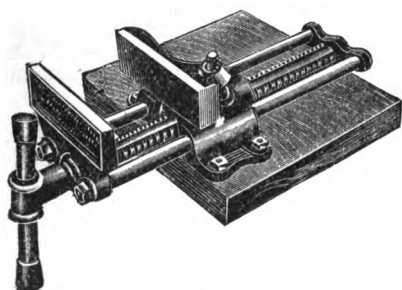


FIG. 3785.

**NO. 30 HIGH SWIVEL JAW VISE.**

For some classes of work the high jaws combined with the Swiveling features, will be found very desirable. This Vise has 8 in. jaws, and opens 12 in. Price, \$7.50.

**SPECIAL NOTICE.**

We can furnish (at same prices) the Nos. 20, 25, 30 and 35 Vises, with Continuous Screw instead of the Rapid Acting feature. We really know of no good reason for any one wanting them in this way, but occasionally we have orders.

Can also furnish with any width of opening from 3 in. to 36 in. Prices upon application.

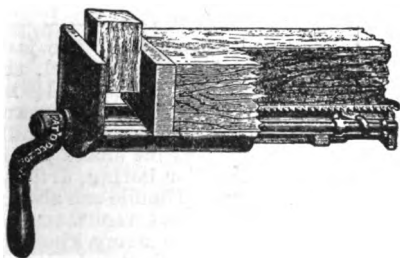


FIG. 3786. NORBOURN VISE.

This is an excellent Vise; it is very simple, being composed of only five pieces; the jaws are planed. We can recommend this as being the best tool in the market for the price, and also as being quite equal to many vises sold at nearly double the price. The jaws are 9 in. wide and open 12 in. Price, \$4.10.

**COACH MAKERS' VISE.**

These Vises are designed for the use of Coach-makers, Cabinet-makers, Pattern-makers and Wood Workers generally. There are perhaps some conditions under which these Vises can be used to better advantage than the style of vise shown in Figs. 3782 and 3783. In our judgment, however, the other styles will be found, for general work, more desirable.

The Victor Vises are the best and strongest of this type; they have the Swivel Self-Adjusting Back Jaws, which automatically adjust themselves, for holding taper or wedge shape pieces.

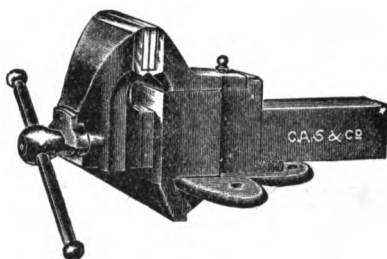


FIG. 3787. VICTOR FLAT BASE.

No.	Each.	Jaws.	Weight.
376	\$6.80	4 in. opens 7½ in.	40 lbs.
377	9.35	4½" " 9½ "	59 "

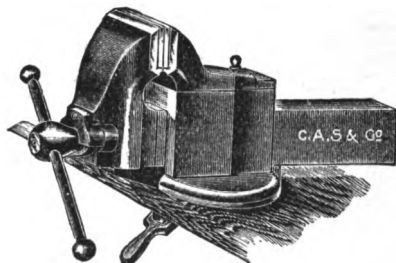


FIG. 3788. VICTOR SWIVEL BASE.

No.	Each.	Jaws.	Weight.
276	\$8.10	4 in. opens 7½ in.	40 lbs.
277	11.05	4½" " 9½ "	65 "

**TEARING CATALOGUES**—Every article in this catalogue is very plainly described, either by figure number, regular number, or name; and we beg our customers not to cut or tear the pages as this mutilates catalogue and destroys it for future reference.

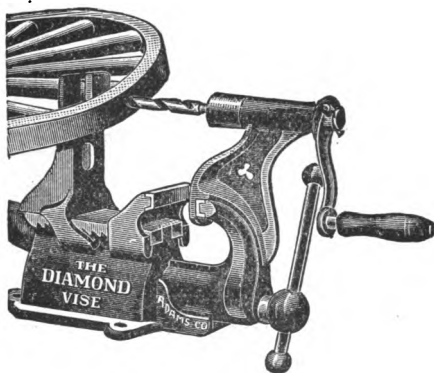


FIG. 3789. DIAMOND VISE.

This combination Vise and Anvil is not to be compared with the farmers' vises, which have been on the market. The face of anvil is chilled, ground and polished, and is 3x7 in. (not including horn); the vise jaws are faced with steel, nicely milled, and are 4 in. wide.

Taken altogether it is a very good tool at a surprisingly low price. Weight, 42 lbs.; with Drill Attachment, 57 lbs. Price, \$3.35; with Drill Attachment, \$5.50.

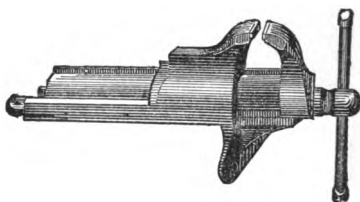


FIG. 3790. OVAL SLIDE VISE.

This is a well made, low priced Vise, useful for general work. We would not recommend them in the larger sizes, as in the Diamond Anvil and Vise combined (Fig. 3789) is furnished a superior combination at a lower price.

2½ inch Jaw,	\$1.65;	weight,	11 lbs.
3 " "	2.20;	" "	18 "
3½ " "	2.80;	" "	29 "
4 " "	4.00;	" "	36½ "

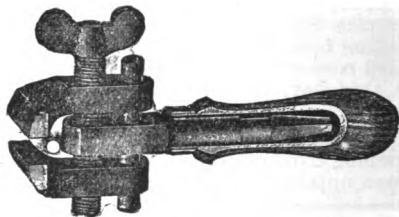


FIG. 3791. HAND VISE NO. 1.

This is a good, strong tool; the jaws are of forged and tempered steel, the handle of rosewood. Jaws are 1½ in. wide and open 1½ in. Will center and hold tools firmly of any shape. Handle can be unscrewed and bit shank put in its place, to be used for boring, drilling or cutting washers. Handle can also be screwed into a vise at right angles, which is desirable for many kinds of work. Price, \$1.75, all nickel plated; weight, 24 oz.

## HAND VISE NO. 2.

Is quite similar to the No. 1, described above, but without the small tools, and is blued steel finish with polished jaws. It may be used as a vise, wrench or drill chuck and is a very substantial tool. Price, \$1.50; weight, 18 oz.



## REFERENCES.

For many years a fashion has prevailed of printing in catalogues a list of names of "Distinguished Patrons." In a catalogue before us we find that 42 pages are given up to such a list, together with letters. If we were to undertake to print a list, it would fill a great many more than 42 pages. If we had kept all the complimentary letters we have received, we would have enough to stuff a mattress (the uncomplimentary ones might possibly make a very small pillow). There are very few of the most important concerns in the country who are not customers of ours. Among the best known are

**ELECTRICAL CONCERNS**—General Electric Co., Westinghouse Co. and others.

**AGRICULTURAL IMPLEMENTS**—Nichols & Shepard, Advance Thresher Co., Walter A. Wood Co., McCormick Co.

**CAR COMPANIES**—Pullman, Michigan-Peninsular, Barney & Smith, and others.

**PUBLIC INSTITUTIONS**—Cornell University, Purdue University, Universities of Michigan, Wisconsin, West Virginia, Chicago, Dakota, etc., etc., besides hundreds of other Colleges, Schools, Penitentiaries, Reformatories, Alms Houses, etc., etc.

**RAILROADS**—Pennsylvania System, New York Central, Baltimore & Ohio, Michigan Central (who say they would buy a good deal more stuff of us if our prices weren't so high), and a great many others.

Besides this, there are any number of manufacturing concerns in all lines, producers of Gold, Glass and Glue, Silver,

Salt and Soda, Copper, Cotton, and Cap-sules, and so on *ad infinitum*.

It is of course quite gratifying to have amongst our customers thousands of the largest and best known manufacturing and mercantile concerns throughout the world, but

"Why should the spirit of mortal be proud?"

There are, without a doubt, many thousand users of Tools, Supplies and Machinery of less celebrity, whose requirements are just as exacting, and whose wants are just as important. When Mr. Charles H. Nye, of Loveland, Ohio, orders a few chisels, an oil-stone and a screw driver, or when Mr. William Essig, of Bangor, Me., orders a few twist drills, a few pounds of bab-bit, and a few feet of leather belting, these gentlemen are quite as able to judge of the quality, and are perhaps just as particular in regard to the quality and prices—perhaps more so—than the gentlemen who do the buying for the Standard Oil Co., the Westinghouse Co., or the Pullman Car Co.

**THEREFORE**—To the many thousand readers of our catalogues who are regular customers of ours, we have no references to offer. They know our goods and our methods, but to the many thousands more who have never dealt with us, we can offer nothing better in the way of references than the catalogues themselves, and if a careful perusal of these catalogues does not convince the reader that we know what we are talking about when it comes to the question of Tools, Machinery and Supplies, we will have to give it up as a bad job.



FIG. 654  
WOOD BENCH  
SCREW

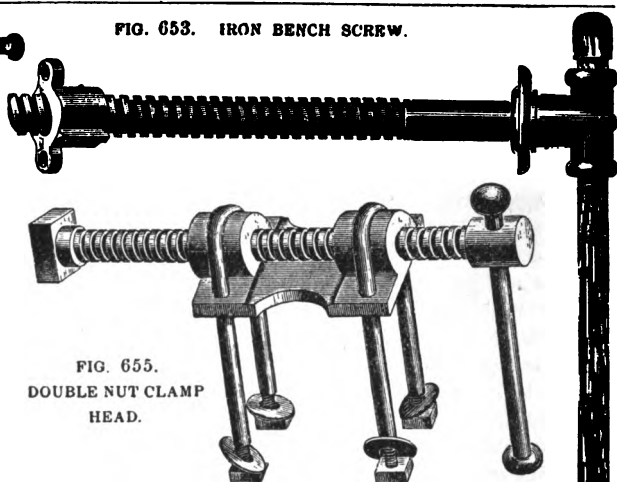


FIG. 653. IRON BENCH SCREW.

FIG. 655.  
DOUBLE NUT CLAMP  
HEAD.

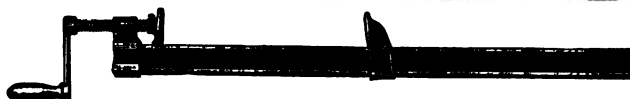


FIG. 656. MANUFACTURERS' AND BUILDERS' STEEL BAR CLAMP.



FIG. 657 PIANO-MAKERS' CLAMP.

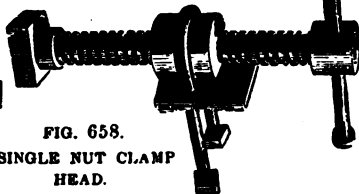


FIG. 658.  
SINGLE NUT CLAMP  
HEAD.



FIG. 659 CARPENTERS' DOOR CLAMP.

#### BENCH SCREWS AND CLAMPS.

Fig. 653 shows the regular Wrought Iron Bench Screw. The ordinary length is fifteen inches. We carry sizes as per list.

Diam.	Each.	Lgth.	Diam.	Each.	Lgth.
1	\$0.40	15	1½	\$0.60	15
1	0.90	20	1½	1.15	20
1	1.10	24	1½	1.50	24
1½	0.50	15	1½	0.90	15
1½	1.00	20	1½	1.80	20
1½	1.25	24	1½	2.35	24

#### WOOD BENCH SCREWS FIG. 654

We have the Wood Bench Screws both in maple and hickory. The maple bench screws are of good quality, and similar to those usually found in hardware stores.

Diameter, 2 in. 2½ in. 2¾ in.  
Each, \$0.30 0.40 0.50

Our Hickory Bench Screws are made by the R. Bliss Mfg. Co., and the finest quality second growth hickory is used.

Diam., 1½ in. 1¾ 2 2½ 2¾  
Each. \$0.40 0.45 0.55 0.65 0.75

**COLT'S SCREW CLAMPS.**

This Clamp has been on the market for several years, and has met with a constantly increasing demand from cabinet-makers and builders. They are used largely by sash, door and blind manufacturers.

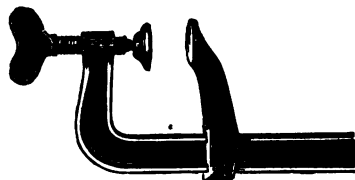


FIG. 660

**COLT'S ECCENTRIC CLAMPS.**

The Eccentric Clamp is generally preferred to the screw clamp, and we sell perhaps five to one of this kind. Twelve inch size and upwards are different in form from cut, being heavier and stronger.

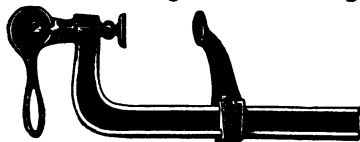


FIG. 661.

**PRICES OF SCREW AND ECCENTRIC CLAMPS.**

No.	Opens.	Each.	Per doz.
No. 1	4 inches.	\$0.38	\$3.60
" 2	6 "	0.50	4.95
" 3	8 "	0.60	6.30
" 4	12 "	0.75	7.65
" 6	15 "	0.85	8.70
" 7	18 "	0.90	9.30
" 9	24 "	1.10	10.80
" 10	30 "	1.20	12.15
" 11	36 "	1.35	13.50
" 13	48 "	1.60	16.20
" 15	60 "	1.90	18.90
" 17	72 "	2.15	21.60

Clamp Head, Fig. 658, with Wrought screw and single nut.

Diam of Screw,	1 in.	1½ in.	1½ in.
Each,	\$1.00	1.20	1.45

Clamp Head, Fig. 655, with Wrought screw and double nut.

Diam. of Screw,	1 in.	1½ in.	1½ in.
Each,	\$1.20	1.45	1.70

**MANUFACTURERS' AND BUILDERS' STEEL.****BAR VISE CLAMP FIG 656.**

We particularly recommend this Clamp to all manufacturers who require a strong screw clamp. In it is retained the important feature of instantly gripping the work, the clamping arm or jaw locking at any point desired. The bar is made of heavy H shaped steel, and is not weakened by notches or holes, making it not only the strongest, but the lightest and most portable clamp of its kind made

No. 3,	\$1.70 each,	opens 3 feet.
" 4,	2.00 "	" 4 "
" 5,	2.35 "	" 5 "
" 6,	2.70 "	" 6 "
" 8,	3.40 "	" 8 "

**CARPENTER'S DOOR CLAMP FIG. 659.**

Fig. 659 shows the clamp mounted. Price, each, \$1.60. Fixtures only, \$1.15.

**PIANO-MAKERS' CLAMP, FIG. 657.**

No.	Each.	Per Doz.	Opens.	Bar.
56	\$0.75	\$ 7.50	2 ft. 4 in.	½ x 3
57	0.95	9.60	3 " 4 "	½ x 3
58	1.10	11.00	4 " 4 "	½ x 3
59	1.25	12.50	5 " 4 "	½ x 3
60	1.40	14.00	6 " 3 "	1½ x 3½
61	1.50	15.00	7 " 3 "	1½ x 3½
62	1.60	16.00	8 " 3 "	1½ x 3½

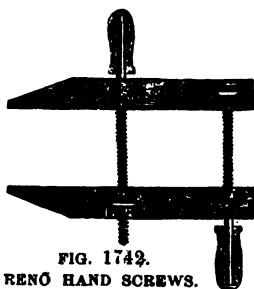


FIG. 1742.

**RENÓ HAND SCREWS.**

year after year, which leads us to believe that we may be a little "Off" in our judgment.

These Hand Screws have steel screws & metal bearings and are strong and durable.

We never thought much of them, but many customers prefer them and keep on buying them

L'gth	6	8	10	12 in.
Open,	5½	6½	7½	8½
Each,	\$0.35	\$0.35	\$0.35	\$0.40
Doz.	3.70	3.70	3.70	4.30
L'gth,	14	16	18	20 in.
Open,	9½	10½	11½	13
Each,	\$0.50	\$0.60	\$0.75	\$0.90
Doz.	5.00	6.00	8.00	9.30

## HAND SCREWS.

The Hand Screws made by R. Bliss Mfg. Co. have been the standard as far as excellence of quality is concerned, for the past thirty years or more, and they are almost universally used in the leading cabinet shops throughout the country. The majority of organ and piano manufacturers will use no other, notwithstanding that they are from ten to fifty per cent higher in price than any other make.

Many of our customers use a paste, or mixture, made of Graphite (black lead) and tallow, which they apply to the screws when they are received new in the shop. This not only makes them work easier, but adds considerably to their length of service.

We print here the line of sizes we carry in stock, can furnish larger as well as intermediate sizes.

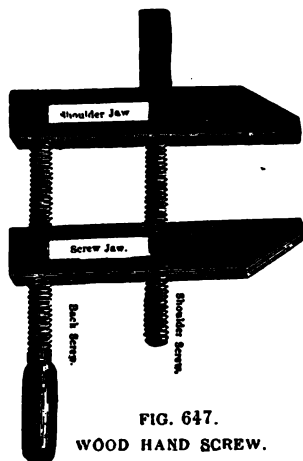


FIG. 647.

WOOD HAND SCREW.

No	Price, Dozen	Price, Each	Diam Screw.	Length of Jaw	Opens.
2	\$7.20	\$0.70	1 1/4 in.	20 in.	13 in.
5	6.30	.60	1 1/2 "	18 "	11 "
7	5.65	.55	1 "	16 "	9 "
10	4.50	.45	1 "	14 "	8 "
11	3.60	.35	1 "	12 "	7 "
12	3.15	.30	1 "	10 "	5 "
14	2.00	.20	1 "	7 "	4 "
15	1.65	.17	1 "	4 "	2 "

The Bliss Co make a complete line of piano and cabinet makers' clamps. Sizes and prices upon application

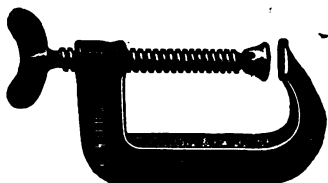


FIG. 648 EAGLE CABINET CLAMP.

Eagle Cabinet Clamps are made with swivel head on end of screw, and frames are ribbed around the side. We think they are the best made and strongest Malleable Clamp in the market

Size,	2	3	4	5	6 in.
Doz.	\$1.35	2.15	3.00	3.50	4.55
Size,	.15	.22	.30	.35	.45
Size,	7	8	10	12 in.	
Doz.	\$5.50	6.30	7.75	9.50	
Each,	.55	.65	.80	.95	



FIG. 649. SNOW'S ADJUSTABLE CLAMP.

This Clamp is generally conceded to be the best one of the quick-adjusting type.

Size,	2	3	4	5 in.
Doz.	\$5.05	5.85	6.50	7.35
Each,	.46	.53	.60	.67
Size,	6	8 in.		
Doz.	\$9.80	11.00	13.50	
Each,	.90	1.00	1.25	

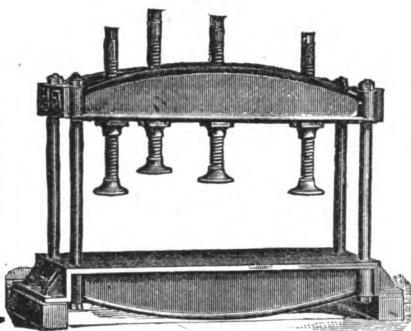


FIG 1743.

WOOD SCREW CUTTING BOX.

Size, in	1/4	1/2	3/4	1	1 1/4	1 1/2
Each,	\$0.75	.75	.80	1.00	1.15	1.35
Size, in.	1	1 1/4	1 1/2	1 3/4	2	
Each,	\$1.45	1.65	1.85	2.60	3.40	4.50
Postage.	1/2 in. 10;	3/4 in. 15;	1 in. 20	cts.		

There are lots of GOOD THINGS in the market that are not shown in this book. Some of them we can tell you about, if you will write us.

FIG. 3820.  
SINGLE SCREW PRESS.FIG. 3821.  
SECTIONAL PRESS.  
TWO SCREW.FIG. 3822.  
SECTIONAL PRESS.  
FOUR SCREW.

## SCREW PRESSES.

We present here a very complete line of Screw Presses used for Veneer work and many other purposes. The sizes listed are those most commonly used, but we can furnish these presses in much greater variety than shown here.

## SINGLE SCREW PRESSES.

These Presses are adapted for veneering all kinds of Panels, Newel Posts, —in fact all work up to their capacity. They can be used singly, or several can be used side by side for long work. Top surfaces of the bases and lower surfaces of the arches are planed true. They are made 36 in. high from top of base to lower side of arch, leaving about 31 in. in the clear. Screws are of 2 in. steel, 24 in. long. Bearings of screws nearly 6 in. long. Sizes given are length of base and width of base between uprights.

No.	Price.	Size.	No.	Price.	Size.
12	\$33.75	12x12	15	\$41.40	24x18
13	36.00	18x12	16	42.75	24x24
14	39.60	18x18	17	45.00	30x24

## SECTIONAL PRESSES.

Figs. 3821 and 3822 represent Sectional Presses with 2 and 4 Screws. The top surface of base and lower surface of top are planed true. The extensions or foot pieces are all planed the same height, so that when Presses are set side by side the bases are all the same height and in line with each other.

The dimensions given, are widths between uprights and widths of bases. They are all made 36 in. high from top of base to lower side of top, leaving about 32 in. clear between the base and lower end of screw. Screws are made of 2 in. steel; these and the nuts are exact sizes, and can be changed from one press to another. These Presses have been redesigned, are heavier, have wider bases, are ribbed, and are much stronger than formerly.

No.	Price.	Between Uprights.	Width Base.	No. of Screws.	Weight Lbs.
1	\$13.60	12	9½	1	220
2	17.60	18	9½	2	320
3½	22.10	24	10½	2	400
4½	23.80	28	10½	2	450
5½	25.50	32	10½	2	500
6½	34.00	38	10½	3	625
7½	42.50	44	10½	3	700
8½	51.00	53	12	4	1000
9½	76.50	61	14	4	1650

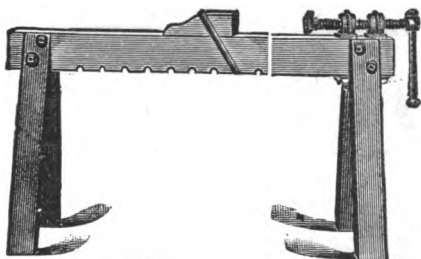


FIG. 3823. CLAMP HORSE.

These have hard maple bar 3½x4 in. and double iron clamp head with 1½ in.

screw; will open 6 ft. Both bar and block are grooved out to receive strips for raising or lowering work to center of screw. When made in pairs, the legs of one horse will set between those of the other, a convenience when it is desired to bring the bars close together. Price, per pair, \$7.00.

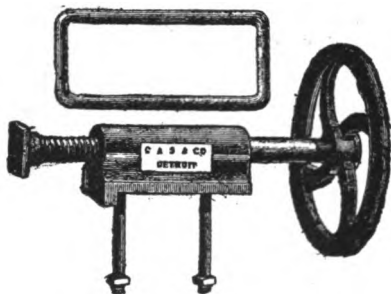


FIG. 3824. CLAMP SCREW.

This is a useful Clamp Screw for clamping Sash, Blinds, Doors, etc. Are strong and durable. Each Clamp is furnished with Clevice and 2 Bolts complete. Price, per pair, \$5.50.

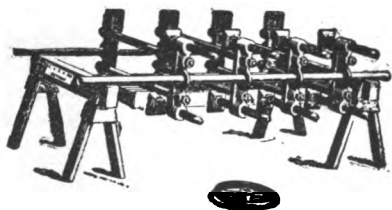
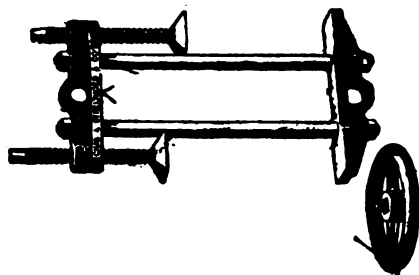


FIG. 3825.

#### NEW STYLE DOUBLE CLAMP.

For many classes of work these Clamps will readily take the place of ordinary hand screws, and of course are very

much stronger and more durable. The illustration shows the construction quite well. The screws are of steel 1 inch in diam. Flanges attached to the ends of screws; heads of screws are square to fit hand wheel. Surface of base against which stock is clamped is planed true, and the top and base castings are joined by steel rods. Distance from steel rod to outer end of base 3 in.; distance from top and bottom castings 16 in. These Clamps have holes in top of base suitable for 1 in. gas pipe, and by slipping as many clamps as are required on the pieces of pipe, as shown in illustration, the stock can be easily and quickly placed in position and the pressure applied. After one side has been filled the clamp can be turned over and the other side filled in the same manner.

Price of Double Clamps, \$3.50 each. This does not include Hand Wheels, which are \$0.50 each. Our reason for pricing these separately is, that in many cases only one or two Hand Wheels would be desired for a large number of Clamps.

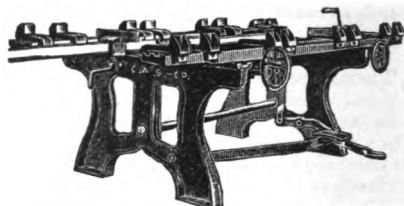


FIG. 3826. DOOR AND BLIND CLAMP.

This is a heavy, single motion Door and Blind Clamp; is operated by simply pushing down one lever with the foot, and turning the end screw by hand. Has adjustment of  $1\frac{1}{2}$  inch, and is adjusted forward and backward by the hand wheels running the whole width of the machine. Will clamp any size up to 4 ft. 4 in. wide by 8 ft. long, with a single motion of the foot treadle. Each machine has 16 long dogs for doors, and 16 short dogs for blinds. Can furnish Sash Attachment, which will clamp sash on four sides perfectly square at one operation.

Door Clamp, \$108.00; with Sash Attachment, \$126.00.

Door and Blind Clamp, \$126.00; with Sash Attachment, \$144.00; weight, 1600 lbs.



FIG. 3827. CHEESE PRESS SCREW.

These Cheese Press Screws are made of steel; other parts are cast iron.

Diam. Screw.	Each.	Length in.	Diam. Screw.	Each.	Length in.
1½	\$2.90	18	2	\$4.30	18
1½	3.20	24	2	4.90	24
1½	3.36	18	2	5.50	30
1½	3.84	24	2	6.10	36



FIG. 3828. PRESS SCREW.

These Screws are made of steel, with cast iron nuts and caps. They are used for pressing Cider, Wine, Tobacco, Lard, Cloth, etc., and the larger sizes are also used for House-raising Screws.

Diam. Screw.	Each.	Length in.	Diam. Screw.	Each.	Length in.
1½	\$1.96	12	2½	\$5.36	30
1½	2.16	16	2½	5.96	36
1½	2.40	20	2½	7.24	48
2	2.72	16	2½	8.52	60
2	3.04	20	3	7.68	24
2	3.36	24	3	8.64	30
2	3.84	30	3	9.60	36
2	4.32	36	3	11.52	48
2½	4.76	24	3	13.44	60

Intermediate diameters and lengths furnished at proportionate prices.



FIG. 3329. CAST IRON SCREWS.

These Screws are cast with seamless threads, which makes them very smooth and uniform. They are used almost entirely for House-raising purposes.

They are 3 inches in diam. Prices

are as follows, and length given is over all: 20 in., \$2.35; 24 in., \$2.65; 30 in., \$3.15; 36 in., \$3.70. Intermediate lengths furnished at proportionate prices.



FIG. 3830. JACK SCREWS.

This illustrates the ordinary style of Jack Screw. We list here the sizes most commonly used. Can furnish, when required, 50 other sizes.

Diam. of Screw.	Price.	Height of Base.	Height over all.
1½	\$1.10	6 in.	9 in.
1½	1.30	10	13
1½	1.30	6	10
1½	1.65	10	14
1½	2.00	14	18
1½	1.70	8	12
1½	2.25	14	18
2	1.85	6	10½
2	2.50	12	16½
2	3.45	18	22½
2½	2.75	6½	11
2½	3.65	12	18
2½	4.85	18	24
3	6.50	14	20
3	7.75	20	26

## CAPACITY OF SCREWS.

The capacity of the various diameters of Steel Screws is about as follows: 1½, 8; 1½, 10; 1½, 12; 2 in., 16; 2½, 24; and 3 in., 30 tons.

## OTHER JACKS.

NOTE.—In our Metal Workers' catalogue, "A Book of Tools," (see page 744 of this book) is described a large variety of Hydraulic, Lever, Toothed, Trip and other Jacks.

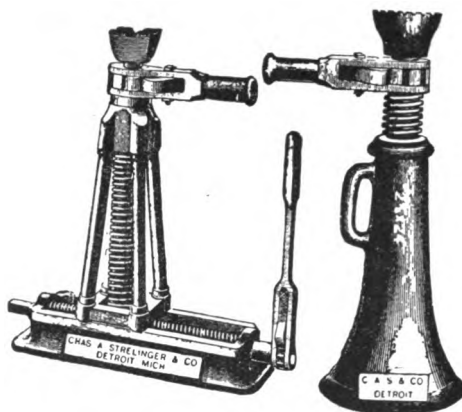


FIG. 3831.  
RATCHET CARRYING  
JACK SCREW.

FIG. 3832.  
RATCHET  
JACK SCREW.

The Ratchet Carrying Jack Screw, Fig. 3831, has a steel base, brass nuts, wrought iron screws and legs. The ratchets, pawls and handles are made of steel and malleable iron. Diam. of lifting screw, 2½ in.; traverse screw, 1½ in. Length of lifting and traverse screws, 18 in. Height over all when down, 26 in. The lifting capacity is 36 tons. Price, \$56.00.

Fig. 3832 represents a Ratchet Jack Screw; this Screw is a labor and time-saver, and can be used in many cases where, on account of blocking, etc., the ordinary style of bar jack can not.

Prices are very much lower than formerly. Can furnish other sizes.

Diam. Screw.	Each.	Height over all.	Capacity tons.
2 in.	\$5.35	12 in.	20
2	5.85	16	20
2½	7.50	18	24
2½	8.50	24	24
3	10.70	20	30
3	12.85	28	30

#### LOCKPORT WAGON JACK.

This Jack is made entirely of metal except the handle. The steel lifting rod is adjustable, and held by a friction steel clutch, operated by powerful compound lever. The neatest, strongest and most compact Wagon Jack we know of.

No. 1, \$4.00, for Threshers, Engines, etc.; No. 2, for Heavy Trucks, etc.; No. 3, \$1.50, regular size for Wagons, etc.

## SETS OF TOOLS AND CHESTS.

These Tool Chests are put up to meet a growing demand from Carpenters, Cabinet and Pattern-makers, Railroads and Mines, Farmers, Planters, Manufacturing establishments, etc., for sets of tools that are more or less complete and adapted to the different needs.

All Tools are of the best quality, fully warranted, and are sharpened and fitted ready for use. If we may, with becoming modesty, say it, we believe that we are the most extensive dealers in strictly high-grade tools of any house in the world, and the Tools in these Chests are our regular stock goods. We deem it necessary to state this, in connection with Tool Chests, as the majority of tool chest outfits are provided with tools of such indifferent quality, as to render them of little practical use.

So far as quality of steel and temper are concerned, the tools in the lower-priced Sets are the same as the others, the difference being in style, finish, and points of convenience that go to excel, as well as in the quantity of tools furnished.

No.	Price, With Chest.	Price, Tools Only.	No. of Tools.
22	\$41.50	\$27.50	90
23	53.25	39.25	106
24	67.00	53.00	126
25	83.50	67.50	146
26	103.50	87.50	177
27	119.50	103.50	210
28	153.00	137.00	256

Will be pleased to send upon application, complete list of Tools contained in these Chests.

#### TOOL CHESTS ONLY.

These Chests are made of thoroughly well seasoned, kiln-dried stock. Are finished with 3 coats of shellac and varnish.

No. 1 Chest, \$14.00. This is the size Chest that is used for Sets Nos. 22, 23 and 24. Outside measurement 36½ in. long, 20 in. wide, 20 in. deep. Inside measurement, 33 x 16 x 18½. 3 Trays, 33 x 6½ x 2½; 1 Saw Till, 33 x 4½ x 7.

No. 2 Chest, \$16.00. This is the size



Chest that is used for Sets Nos. 25, 26, 27 and 28. Outside measurement, 40 in. long, 23 in. wide and 23 in. deep. Inside measurement, 21x37x20. 3 Trays, 37x8x3. 1 Saw Till, 37x4½x9; 1 extra Tray which can be used as a carrying box, 35x7x7½.

The above Chests have Heavy Brass Yale Locks, Japanned Handles, and Brass Hinges.

#### SPECIAL OAK CHEST.

This is a medium size Chest intended for house use. Is made of quarter-sawed oak, handsomely finished, Bronze Handles, Brass Lock and Hinges. Outside dimensions, 33x15x14. Is long enough to take in a 26 in. Skew Back Saw. Has 3 Sliding Trays.

Price, \$8.00.

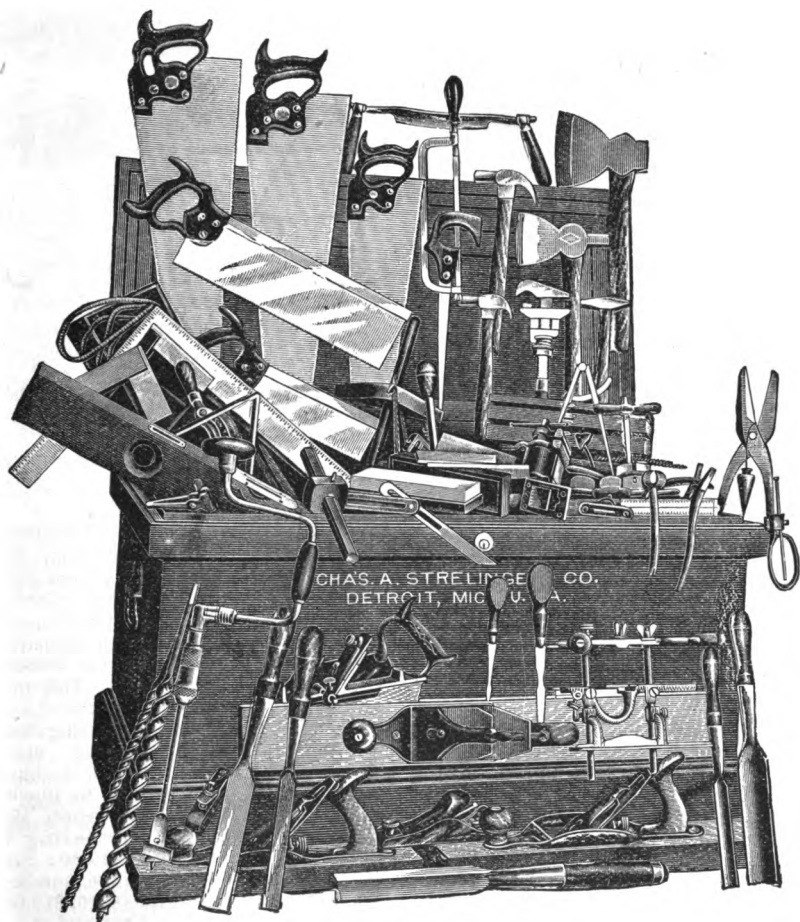


FIG. 3833 CARPENTER'S TOOL CHEST.

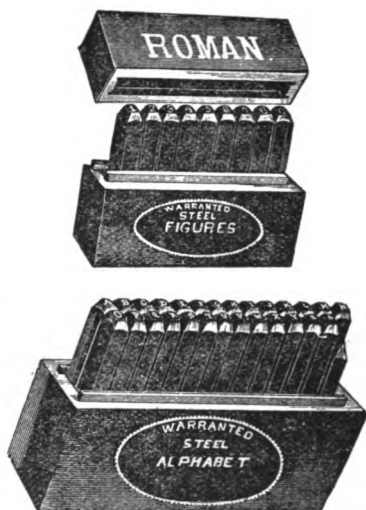


FIG. 988. STEEL LETTERS AND FIGURES.

Steel Letters and Figures and Name Stamps are essential, both in Mechanics' and Manufacturers' outfits. Manufactured goods should be plainly stamped with maker's name and address, and tools should be stamped so that they may be identified if lost or stolen. The owner's name on a tool may not prevent its being stolen, but a "tramp" will usually think twice before he steals a tool with the owner's name plainly stamped on it.

The greatly increased demand for Steel Letters and Figures (more especially in connection with typewriter work) has led to the designing of improved machinery for their manufacture, and a consequent lowering in price.

The Solid Steel Stamps, Fig. 989, have to be made by hand.

Size.	Letters, per set.	Figures, per set.	Letters or Fig's, each.
$\frac{1}{8}$	\$3.00	\$1.00	\$0.25
$\frac{1}{16}$	2.70	.90	.20
$\frac{1}{32}$	2.10	.70	.15
$\frac{1}{64}$	2.10	.70	.15
$\frac{3}{128}$	3.00	1.00	.25
$\frac{1}{16}$	3.60	1.20	.30
$\frac{1}{8}$	4.20	1.40	.35
$\frac{3}{32}$	6.00	2.00	.45
$\frac{1}{4}$	10.00	3.60	.55



FIG. 989. SOLID STEEL STAMP.

We can furnish Name Stamps to order, of almost any design required. The prices given here are for Plain Stamps per letter.

Size, $\frac{1}{8}$ to $\frac{1}{4}$	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{3}{128}$	$\frac{1}{16}$
Price, \$0.20	.25	.30	.35	.45	.55

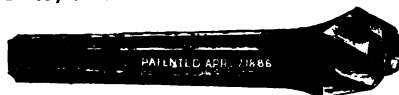


FIG. 990. CAST IRON LETTERS AND FIGURES.

The Cast Iron Letters and Figures are useful for stamping wood, leather, and soft metals. They can also be used for burning names and figures on wood; they are sharp and deep, and nicely finished. Made in two sizes,  $\frac{1}{4}$  and  $\frac{1}{2}$  inch.

Size.	Figures per Set.	Letters per Set
$\frac{1}{4}$ inch	\$1.50	\$4.50
$\frac{1}{2}$ "	2.50	7.50

FIG. 991. AUTOMATIC NUMBERING MACHINE.



This Numbering Machine is small and light to handle, thus insuring speed and ease of operation. All wearing parts, including figure wheels, are of steel. This machine will be found useful for numbering time cards, checks, etc., etc.

Four-wheel Machine, numbering to 10,000, \$9.00; Five-wheel Machine, numbering to 100,000, \$10.50; Six-wheel Machine, numbering to 1,000,000, \$12.00.

Other sizes and styles of Machines furnished when desired.

FIG. 991.

**PATTERN LETTERS AND FIGURES.**

These Letters and Figures are used by Foundrymen, Machinists, and Pattern-makers to put inscriptions of names, dates, of patents, etc., on patterns of castings. These Letters are made of composition metal, somewhat harder than lead. We can furnish (to order only) Brass Pattern Letters in a great variety of styles. The Brass Pattern Letters can be soldered or "sweat" onto the patterns. The price of Brass letters is three times that of the Composition letters.

The sizes given are face measurements, the measurement over all being from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch larger.



FIG. 992. ROMAN STYLE.

The Roman style letters are the most commonly used.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$ in.
Each,	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$ cts.
Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$	$1\frac{1}{2}$ in.
Each,	$2$	$2\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$	$7$ cts.

Can furnish additional sizes in the Roman pattern up to and including 4 inch.



FIG. 993. SHARP FACE GOTHIC.

The Sharp Face Gothic is, we think, the handsomest style of all, especially for nice machine work.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$	$\frac{1}{2}$ in.
Each,	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$ cts.
Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$ in.
Each,	$1\frac{1}{2}$	$2$	$2\frac{1}{2}$	$3$	$4\frac{1}{2}$ cts.

Can furnish additional sizes in the Sharp Face Gothic pattern up to 3 inch.

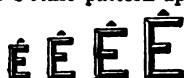


FIG. 994. HAIR LINE GOTHIC.

This is a very light letter, but will make a sharp, clean print upon hollow ware, or

stoves, where it is desired to have nearly a smooth surface. We keep them in four sizes,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $1\frac{1}{4}$  inch. Price, per letter, all sizes,  $1\frac{1}{2}$  cts.

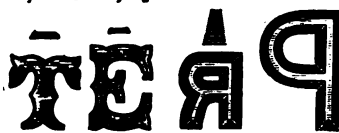


FIG. 995.

ANTIQUE POINTED.

Size,	$\frac{1}{4}$
Each,	$3$

FIG. 996.

REVERSED.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1$ inch.
Each,	$3$	$3\frac{1}{2}$	$4$	$4$ cts.

The Reversed Letters, Fig. 996, are used for making Branding Irons, Moulds for Babbitt Metal, Brick and Artificial Stone. Size,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $1$  inch. Each,  $4$ ,  $4$ ,  $5$ ,  $5\frac{1}{2}$ ,  $5\frac{1}{2}$  cts.

We can furnish other sizes and patterns of Branding Letters if desired.



FIG. 997. NUMBERING PLATE.

These Numbering Plates are made of White Metal, with figures in relief and Japanned back ground; are used largely for Church pews, College and State-room doors, Post Office boxes, etc., etc.

Price, each, with  $\frac{1}{4}$  inch Figures, 10 cts.;  $\frac{1}{2}$  inch, 12c;  $\frac{3}{4}$  inch, 16c; 1 inch, 20c.



FIG. 998. NAME PLATES.

These Plates are made of Brass, handsomely finished and nickel-plated (or left in brass finish, if desired). We furnish them in two widths, the length being in proportion to inscription.

The No. 1 Plates are  $\frac{1}{4}$  inch wide, and from  $2\frac{1}{2}$  to 3 inches in length. The No. 2 Plates are  $\frac{1}{2}$  inch wide. No order taken for less than 12 of a kind.

	No. 1.	No. 2.
12 Plates from one Die,	\$1.35	\$1.75
25 " " " " "	2.00	2.60
50 " " " " "	3.00	4.00
100 " " " " "	4.00	5.50
300 " " " " "	8.75	10.50
500 " " " " "	11.00	13.50
1000 " " " " "	16.75	20.00

On larger quantities we will quote special prices.

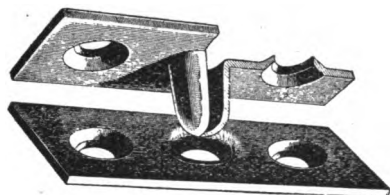


FIG. 999. BRASS PLATE DOWEL.

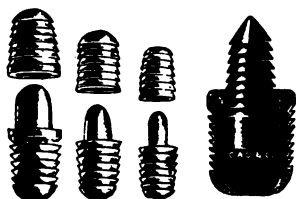


FIG. 1000. BRASS SCREW DOWELS.

The Plate and Screw Dowels represented in the above cuts are very much superior to the wooden pins, or pegs, commonly used. They do not swell with water, or shrink from heat; they save time and expense in pattern room and foundry, and castings from patterns on which these are used do not overlap

## PRICES OF PLATE DOWELS.

Size,	$\frac{1}{2} \times 1$	$\frac{3}{8} \times 1\frac{1}{2}$	$1\frac{1}{2} \times 1\frac{1}{2}$	$\frac{3}{4} \times 2$
Gross,	\$4.25	\$5.00	\$5.75	\$9.50
Doz. post p'd	.45	.55	.65	1.00

## PRICES OF SCREW DOWELS.

Diam. of Pin,	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$
Per 100.	\$2.00	\$2.50	\$3.00	\$3.50
Doz., post p'd,	.30	.40	.45	.50



FIG. 1001. WHITE'S METALLIC FILLET.

The White's Metallic Fillet has been on the market for nearly ten years, and has come into very general use by pattern makers. The larger sizes are being used to quite an extent for glazing and weather stripping, and as a moulding and floor skirting in public buildings. It is put up in reels of 25 and 100 ft.

## PRICE PER FOOT.

	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{4}$	1 inch.
	\$0.05	.06	.07	.08	.09	.10
						.14



FIG. 1002. LEATHER FILLET.

This Fillet can be put in any corner, and as easily upon a compound curve as on a straight line. It is highly recommended for its lightness, durability and neatness; is put up in lengths of four feet, and in packages of 100 feet of each size

Size,	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$
Per package,	\$2.50	\$3.50	\$4.00	\$4.50
Per foot,	.03	.04	.05	.06
Size,	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
Per package,	\$5.00	\$6.00	\$7.00	\$8.50
" foot,	.06	.07	.08	10



FIG. 1003. WOOD FILLET.

This comes in 100 ft. bundles, 4 ft. long; is less in price than either of the others. Sold only in full bundles.

Size,	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$
Per b'dle,	\$1.25	1.50	1.50	2.00
				2.00

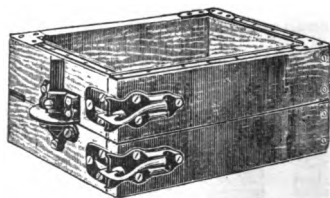


FIG. 1004. DIAMOND SNAP FLASK.

These Flasks are manufactured by machinery and put together by templates, they are all interchangeable on pins, and parts can be duplicated in case of breakage

They are all constructed so as to be "knocked down" and folded for convenience in shipping and storing. Are made in great variety of sizes, and we will name prices of any desired size upon application.

We call special attention to Sets of Five. A Set of Five of any size comprises 5 drags, 2, 3, 4, 5, and 6 inches deep, and 5 copes, the same. They are so arranged as to be interchangeable, so that one can

make 25 different depths of flasks. These Sets are used largely for odd jobs that come into every foundry, and do away with the nailing on of strips to make the flasks suit the work. The sizes most in use are .

12 x 12 and 10 x 14 ;	price, per set.	\$21.50
14 x 14 " 12 x 16 ;	" "	23.00
14 x 16 " 15 x 16 ,	" "	24.00,
14 x 18 " 16 x 16 ,	" "	24.50,

We ship these set up and crated

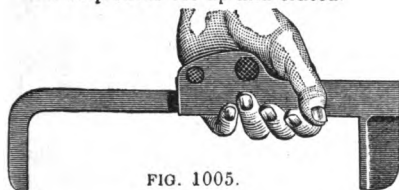


FIG. 1005.

#### DIAMOND ADJUSTABLE FLASK CLAMP.

These Clamps can be adjusted to suit any flask in an instant. Requiring no wedges, they will save the price of themselves in a short time. The Heads are made of malleable iron, with hardened balls, and the Tails of square bar iron.

No	Dozen	Each	Shape	Size.
1	\$0.35	\$0.04	Oblong	$\frac{1}{2}$ x $1\frac{1}{2}$
2	.35	.04	"	$\frac{3}{4}$ x 2
4	.40	.04	"	$\frac{1}{2}$ x $1\frac{1}{2}$
6	.45	.05	"	$\frac{1}{2}$ x $2\frac{1}{2}$
8	.55	.06	"	$\frac{1}{2}$ x 3
10	.65	.07	"	1 x $3\frac{1}{2}$
12	.75	.08	Square	$2\frac{1}{2}$
14	.95	.10	Oblong	$1\frac{1}{2}$ x $4\frac{1}{2}$
17	1.90	.20	"	3 x $5\frac{1}{2}$

The Nos. 9 to 11 are heavier than the others. Can furnish other sizes when desired.

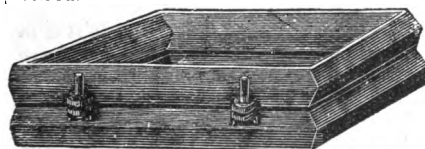


FIG. 1006 BRASS MOULDERS' FLASKS.

These Flasks are drilled with standard templets, bringing the holes the same in each flask, and avoiding the necessity of matching. The faces are accurately planed. We can furnish nearly 200 sizes.

We print here a few of the sizes which are most commonly sold :

Width	Length	Depth over all.	Price, Each.
10 inches.	13 inches.	5 inches.	\$5.50
10 "	17 "	7 "	7.25
11 "	16 "	6 "	6.25
12 "	16 "	8 "	8.00
12 $\frac{1}{2}$ "	18 "	8 "	9.00

#### SMALL JEWELER'S FLASKS.

Width.	Length	Depth over all.	Price, Each.
4 inches.	4 $\frac{1}{2}$ inches.	2 $\frac{1}{2}$ inches.	\$2.50
4 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	3.00
6 $\frac{1}{2}$ "	9 $\frac{1}{2}$ "	8 "	3.55

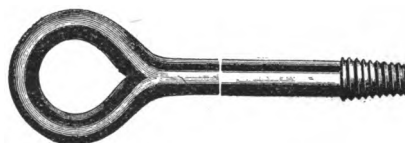


FIG. 1007.

#### RAPPING PLATE.

These goods were first placed on the market a few years since, and have met with great favor. They are easily and cheaply fitted, and are a most necessary accessory to patterns. All numbers from 1 to 6 are tapped  $\frac{1}{8}$  inch; Nos. 7 to 11,  $\frac{1}{4}$  inch; Nos. 12 to 17,  $\frac{3}{8}$  inch. Approximate measurements are as follows :

No	Dozen	Each	Shape	Size.
1	\$0.35	\$0.04	Oblong	$\frac{1}{2}$ x $1\frac{1}{2}$
2	.35	.04	"	$\frac{3}{4}$ x 2
4	.40	.04	"	$\frac{1}{2}$ x $1\frac{1}{2}$
6	.45	.05	"	$\frac{1}{2}$ x $2\frac{1}{2}$
8	.55	.06	"	$\frac{1}{2}$ x 3
10	.65	.07	"	1 x $3\frac{1}{2}$
12	.75	.08	Square	$2\frac{1}{2}$
14	.95	.10	Oblong	$1\frac{1}{2}$ x $4\frac{1}{2}$
17	1.90	.20	"	3 x $5\frac{1}{2}$



#### LIFTING SCREW.

These Lifting Screws can be depended upon to hold the pattern steady while being drawn

Size,	$\frac{1}{2}$ inch	$\frac{3}{4}$ inch	$\frac{1}{2}$ inch.	$\frac{3}{4}$ inch.
Per Dozen,	\$1.20	\$1.50	\$1.80	\$2.20
Each,	12	.15	.18	22

**NO NAME FOLKS.**—Every few days (and sometimes oftener) we receive a letter from some one who forgets to sign his name. If it is an order from him with money enclosed, we are pretty sure to hear from him, wanting to know where the goods are—and sometimes the letters are not overly civil, if it is a letter of inquiry and our correspondent gets no answer, he thinks we are inattentive or careless, and as a result we are apt to lose what might be a good customer.

## A POT OF GLUE.\*

Many men use Glue all their lives and know but little of where it is made, or how. We will tell what we can, and that is not much after all—for it is an old saying, among both manufacturers and merchants, that the more you have to do with Glue, the less you think you know about it.

There are three leading kinds: First, Hide Glue, which is made of the hides or sinews of cattle and such beasts. The pieces of hide cut off by the butcher and tanner, which are of no use in making leather, are soaked in lime water a longer or shorter time, according to their condition. The lime eats away the fatty or partly decayed matter, leaving the glue substance uninjured, provided the process is not continued too long. This stock is then carefully washed and put into large kettles, where the glue liquor is readily boiled out and the insoluble fibre sinks to the bottom. The glue liquor is poured into pans, where it cools and hardens and is just such a substance as calves'-foot jelly when served on the table. When cold, the jelly is turned out of the pans and sliced, and the sheets laid on nets and dried.

The second kind—Bone Glue—is made of the largest bones of cattle, and only differs from the other method in softening the stock by an acid, instead of a lime solution.

Sixty per cent of bone is lime, the other forty per cent (or thereabouts) is glue.

The third kind of glue is made from the feet of cattle and hogs; their hoofs contain a large proportion of glue matter, and this is simply washed and then boiled out.

As to which is best of the kinds mentioned, it is hard to decide between the first and second, the hide stock and the acid-treated bone stock glues. The greater purity and beauty belong most surely to the bone stock glue, and for work requiring delicacy as well as strength, it is unequalled. But the acid left in it, and which it is hard to wholly eradicate, qualifies its use for many purposes. In stiffening straw goods and finishing silks, and for very fine-grained and hard-surfaced wood work, it is admirable.

\*For this article we are indebted to the Milligan & Higgins Glue Co.

But, if we had no bone glue at all, we could get along very well. What would we do, however, if we had no glue made of hide stock? Thick flowing or thin flowing, dark color or light, slow settling or quick, rigid or elastic, it embraces them all. It is an old saying, "That glue is the poor workman's best friend"—that means hide stock glue, which is the cheapest because it is the best.

A great improvement was made twenty years ago, when this company first devised means of grinding glue and at nominal cost. Ground glue is now also extensively used throughout Europe. It is indeed not the poor workman's, but the good workman's best friend.

Now, a word as to the way to use glue. To begin with, glue is animal matter. A ham will keep a long time uncooked, but who would soak it over night and forget it the next day and expect to find the ham sweet; or would soak and cook it in a pot where other hams have been cooked and the pot never cleaned? Such treatment of glue is unworkmanlike and wasteful.

Then the glue maker knows when his glue is cooked enough, and that to cook it longer will hurt both its strength and its color; yet many users think that they can cook glue for hours and get as good, or even better results. They really ought to soak and cook ahead just what they require, and use it as fresh as possible. If the glue is ground (as it should be) they can soak it in three minutes, or dissolve more in the melted glue that is in the pot in one minute, and always have their melted glue at its best.

We now come to a source of much trouble. Glue will not hold unless the pieces to be glued are put together while the glue is still hot and liquid. Its function is to sink into the fibres and grasp them, which it cannot do when chilled. In the Autumn, when cooler weather makes glue dry more quickly, we have complaints that the glue will not hold. A suggestion to the above effect is usually sufficient. Again, take two woods; oak, which is close-grained, and pine, which is porous. One requires a thin-bodied and penetrating glue, to soak in and lay hold; the other needs a heavy-bodied glue, used thick, or the spongy wood will soak up the glue and leave nothing at all to hold with.

## CHEAP GLUES ARE NOT ECONOMICAL.

The quality of Glue is determined by the amount of water it will take, and glue is usually tested in this manner. Some of the cheap, common glues will not take the equivalent of their own weight in water.

The cheapest glue we handle (No. 5) will take 4 oz. of water to one. The No. 10, from 5 to 6 oz. of water to one, and the No. 15, from 8 to 10 oz. of water to one of glue.

The above extreme proportions would be modified by practice, as different kinds of work require the glue to be thinner or thicker, as the case may be.

It will, then, be readily understood that a pound of glue, costing 10 cents, and which will only make a quart of the prepared article, is more expensive than a glue, costing twice the amount, that will make two and one-half quarts, this leaving out consideration of the fact, that quantity for quantity, the higher-priced glue is much stronger and more durable, and in fact, more desirable in every way.

## GROUND GLUE.\*

In past years there has been among many users, a prejudice against Ground glue; and there is some foundation for this prejudice, as there are unscrupulous manufacturers who grind inferior glues as a means of hiding their defects. It is not easy to tell much about glue when ground, but it possesses several advantages over the sheet glue. It requires but a few minutes of soaking to dissolve, and for those who use glue occasionally, it is an easy matter to prepare just the amount needed and no more.

## THE GLUES WE SELL.

## NO. 5 GLUE.

This glue we keep to meet the demand for a low-priced article. It is of a fair quality, quite as good, or better, we think than most of the glue sold throughout the country at a much higher price. Our only excuse for keeping it is, that some people cannot be persuaded that high-grade glues are the cheapest in the long run.

\*SHEET GLUE.—We can furnish any of these glues in sheet form when desired, at  $\frac{1}{4}$  a cent per lb. less (this being the actual expense of grinding).

Price of Number 5 Glue, per lb., in small quantities, \$0.14; in 25 lb. lots, \$0.12.

## NO. 10 GLUE.

This is a strong, sweet glue, suitable for cabinet-makers and general wood-work. It compares favorably with the better class of imported French and Irish glues. We sell more of this for general purposes than any of our glues; have sold it for the past ten years, and never have heard a single complaint.

Price, per lb., in small quantities, \$0.19; in 25 lb. lots, \$0.16.

## NO. 15 GLUE.

This is the best glue we have. It is made of the choicest stock, and is, we believe, *as good a glue as can be produced*. We have customers who are using from one to two thousand pounds a month, men who have given a great deal of attention to the matter of glue, and who assure us that it is superior to anything they have ever used.

Price, per lb., in small quantities, \$0.25; in 25 lb. lots, \$0.22.

## EMERY GLUE.

All first-class Glues answer very well for the purpose of fastening emery, and quartz, or flint, on wheels and belts, but for the best results in this class of work, the glue should possess two qualities. First, it must have great tenacity, so that the particles of emery or flint are held securely. Secondly, it must have flexibility. A glue may be very strong, and yet so hard, that it will crack or "peel", and allow the particles of emery to be thrown off.

As the time consumed in putting the emery on wheels and belts is usually worth many times the cost of the glue, it will be well to remember that a poor glue for this purpose is dear at any price.

Our Emery Glue is made especially for this work. We have it both in the sheet or cake, and ground form.

Price, per lb., in small quantities, \$0.25; in 25 lb. lots, \$0.22 per lb.

## BELT GLUE OR CEMENT.

This is a glue made especially for the purpose of cementing leather belts.

Price, per lb., \$0.50.

## LE PAGE'S LIQUID GLUE.



FIG. 1379

These Fish Glues are applicable to all purposes for which Glue is employed, and are amongst the strongest adhesives known. The advantages of Le Page's liquid glues are found in the saving of labor, time, and fuel necessary for preparing ordinary glues. To secure the best results, it should be applied with a short, stiff brush, and rubbed off to a very thin coat.

We handle only genuine Le Page's glue made by the Russia Cement Co.

Gills,	each,	\$0.18;	per doz.	\$1.80
$\frac{1}{2}$ Pints,	"	.25;	"	2.55
Pints,	"	.40;	"	4.25
Quarts,	"	.70;	"	7.35
$\frac{1}{2}$ Gallons,	"	1.05;	"	11.50
Gallons,	"	1.90;	"	20.40



FIG. 1380

## MORANDI GLUE POT

The Morandi Glue Pot is used with kerosene, does not smoke or smut, heats quickly, and will be found a great convenience.

No. 0,	\$1.00;	capacity,	1 pt.
" 1,	1.25;	"	1 $\frac{1}{2}$ "
" 2,	1.50;	"	2 "
" 3,	1.75;	"	4 "

We can furnish this style Glue Pot for burning Gas. Prices and sizes same as kerosene Glue Pot.

FIG. 1380.  
PORCELAIN  
LINED GLUE  
POT.

No.	Each.	Capacity
00	\$0.40	$\frac{1}{2}$ pts
0	.45	1 "
1	.55	1 $\frac{1}{2}$ "
2	.65	2 "
3	.75	2 $\frac{1}{2}$ "
4	.90	4 "
5	1.10	4 $\frac{1}{2}$ "
6	1.30	5 "



FIG. 1381.

## STEAM GLUE HEATERS.

We present herewith, a very complete line of Steam Glue Heaters. Can furnish other sizes if desired; and can also furnish any of these styles without Stands, at prices from \$2.00 to \$3.00 less than list



FIG. 1382. NO 3 GLUE HEATER

No. 2, \$13.50; has 8 Enamelled Pots, holding  $\frac{1}{2}$  gal. each

No. 3 (see cut), \$17.00; has 5 Enamelled Pots, holding  $\frac{1}{2}$  gal each, and one 1 $\frac{1}{2}$  gal. Pot.

No. 9, \$20.00; has 3 Enamelled Pots, holding 3 gal. each.

No. 10, \$10.00; has 1 Enamelled Pot, holding  $\frac{1}{2}$  gal.

No. 11, \$31.00; has 2 Enamelled Pots, holding 1 $\frac{1}{2}$  gal. each, and 8 Pots, holding  $\frac{1}{2}$  gal each.

No. 12, \$15.00; has 3 Enamelled Pots, holding  $\frac{1}{2}$  gal. each; or (if preferred) three  $\frac{1}{2}$  gal. Pots, with Outside Jackets, as shown in Fig. 1380

No. 16, \$28.00; has one 2 gal. Pot, and five  $\frac{1}{2}$  gal. Pots, or (if preferred) one 2 gal. Pot and five  $\frac{1}{2}$  gal. Pots with Outside Jackets, as shown in Fig. 1380

No. 17, \$26.00; has 16 Enamelled Pots, holding  $\frac{1}{2}$  gal. each.



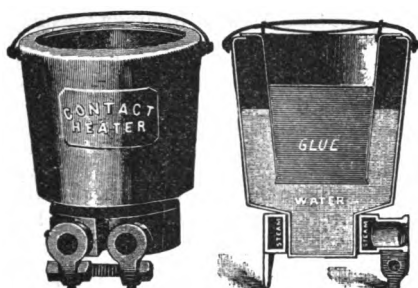


FIG. 1383. CONTACT GLUE HEATER

These Heaters are used very largely by Piano, Organ and Furniture manufacturers, some manufacturers having upwards of 100 in use. They require but one line of Pipe and only 2 Valves to a section of several Heaters. They can be adjusted to maintain any desired temperature. The adjustment is accomplished without the use of valves, by bringing the hot steam-heated surface and the surface to be heated, more or less in contact, which is done by closing or opening the steam-ring, by means of the screw.

Price, with Copper Glue Pot,  $\frac{1}{2}$  gallon, \$4.50

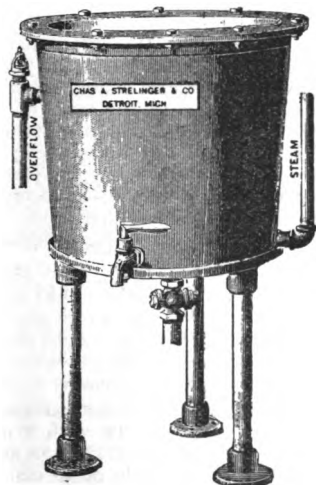


FIG. 1384. GLUE BOILER.

No. 4 $\frac{1}{2}$ , \$22.00; capacity, 5 gallons.  
No. 5 $\frac{1}{2}$ , 30.00; " 10 "  
No. 7, 39.00; " 16 "

**IN ORDERING, always give Figure Number, and Size wanted.**

## WATCHMAN'S CLOCKS

A watchman is employed to protect one against theft and fire, and, incidentally, to impart a sense of security to owners of property. If the watchman is lazy, careless, or (as is sometimes the case), worse, the Watchman's Clock will expose him. If, on the other hand, he is faithful, the Clock will serve but to confirm his reliability.

The Clocks shown here serve a double purpose, of a watch upon the watchman, and a timepiece.

## REGULATOR NO. 1

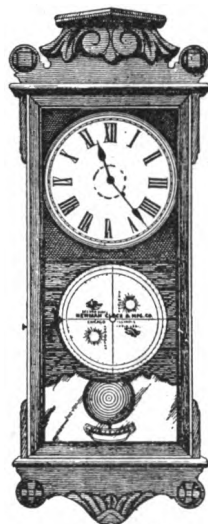


FIG. 1388.

These Clocks cannot be tampered with. They are simple, and there is nothing to get out of order more than in an ordinary clock. They are very reasonable in price, which is quite a consideration, especially where a large number of stations are necessary.

Regulator No. 1, as shown in cut, is operated by a single movement, running eight days. Length of case, 34 inches; width, 12 inches; dial, 8 inches.

The Record Dial is forty-eight hour, and needs to be removed every other day only. Price, \$15.00, with a year's supply of dials.

Regulator No. 2 is operated in the same manner as No. 1. The Watchman's Dial makes a revolution only once in seven days, so that it needs attention but once a week. Price, \$12.00, complete with one year's supply of dials. The cases of these clocks are of dark oak, nicely finished.

## PORTABLE WATCHMAN'S TIME DETECTOR.

Price, with Pouch, Dials, and 6 different keys for 6 different stations complete, \$49.50, with 12 keys for 12 stations, \$52.50.



FIG. 1389.

## OILERS.

The Zinc Oiler, Fig. 1038, we show as a matter of habit and duty. They have but one thing to recommend them—the price. They are sold in large numbers, but with the better class of users, such oilers as the Noera, Draper and others of more modern make and style are rapidly taking their place.

Brass Oilers of the same style as shown in Fig. 1038, are also sold to a limited extent.

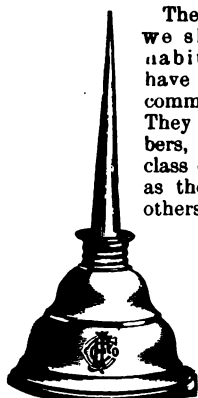


FIG. 1038.

Zinc.		Brass.		Diam. of Bottom, in.	Cap. oz.
No.	Each.	Each.	Doz.		
0	\$0.06	\$0.12	\$1.15	2½	2
1	.08	.15	1.25	2¾	3
2	10	.18	1.50	3½	5
3	12	.20	1.75	3¾	7
4	15	.25	2.25	4	10
5	20	.30	3.00	4½	12
6	.25	.40	3.50	4¾	16

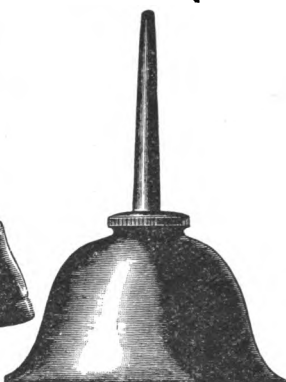
FIG. 1039.  
MALLEABLE.

FIG. 1040. NOERA.

The Malleable Iron Oilers, Fig. 1039, are durable and strong.

No.	Each.	Doz.	Capacity, oz.
1	\$0.30	\$2.70	2
2	.35	3.00	4
3	.40	3.30	6

The Noera Steel Oiler, Fig. 1040, is the *strongest and most serviceable Oiler made*,

in appearance, they are painfully "plain," but they are much handsomer—or rather less ugly—than they used to be, and we still have hopes that the maker will some day either bronze or paint them, or buy a buffing lathe and some wheels and go to an expense of 6 or 8 cents a dozen to have them polished. They are made of heavy sheet steel, the spout is of steel, extra heavy and strong. Each, 40 cts.; per dozen, \$4.25; capacity, 6 oz.



FIG. 1041. DRAPER.

FIG. 1042.  
BENT SPOUT.

The Draper Oilers (manufactured by Noera Mfg. Co.) are made in Steel, Brass, and Brass nickel plated, they are the most popular with our trade of any oiler we sell. The bodies are stamped out of heavy steel and brass stock; the screws and spouts are heavy and strong, they have brass buttons securely fastened, and are all handsomely finished.

## DRAPER STEEL OILERS.

No.	Each.	Doz.	Diam.	Spout.	Cap., oz.
12	\$0.27	\$2.70	2½	2½	3
13	.33	3.30	3¾	3	6
14a	.45	4.50	3½	3	10
15	.60	5.75	4½	3	14

## WITH LONG BENT SPOUT.

We can furnish any of the above sizes of Oilers, excepting No. 12, with 9 inch long bent spout, see Fig. 1042, at an additional cost of 8 cts. each, or 70 cts. per dozen.

IT WILL BE NOTICED that we give in connection with oilers, the capacity of the various sizes. The weight of oil is approximately 16 oz., or 1 lb. to the pint.

## OIL TANKS AND CANS.

The line of Tanks and Cans which we show here is, in point of finish, quality of materials and workmanship, the best that can be produced. We cannot compete with the cheap, light tanks that are sold generally, or *given away*, to secure the sale of a barrel of oil.



FIG. 1074.

## AZTEC OIL TANK.

This is the cheapest Tank we care to sell. It is made of best quality galvanized iron in body, bottom and pan. Wood bottom under the metal. The price includes a Force Pump, as shown in Fig. 1074

30 gals.	\$6.00
60 "	7 00
100 "	12.00
160 "	15 60
250 "	20 40



FIG. 1075. CONE TOP OIL TANK.

These Tanks have been in use for over twenty years, and are the standard. They are made from heavy galvanized iron, and of full capacity. The price of all sizes includes a Measuring and Lift Pump.

30 gals.,	\$9.75	160 gals.,	\$21.50
60 "	13.00	250 "	29.00
100 "	17.75		



FIG. 1076. AZTEC OIL PUMP.

This Pump is 1½ inches in diameter, with special Valve and Brass Stuffing Box. Price, each, \$2.00.

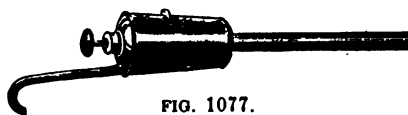


FIG. 1077.

## PATENT MEASURING PUMP.

The discharge tube is small enough to go into all styles of Oilers, and, as the Pump measures accurately, Oilers can be quickly filled and not run over. The valves of these Pumps are of brass, ground air tight and carefully tested.

Price, \$4.00.

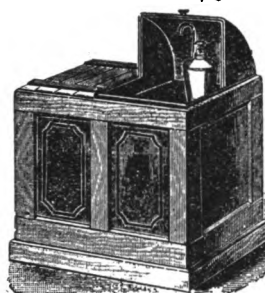


FIG. 1078.

## CABINET OIL TANK.

These Tanks are made of heavy galvanized iron, are protected by wood frame, mounted on three-wheel casters, and all nicely finished.

With Measuring Pump, 60 gals., \$18.00; 120 gals., \$23.00; Double, 55 gals. at each end, with 2 Pumps, \$30.00

## STRAIGHT TANK.

We can furnish to order Straight Tanks, both high and low pattern, with brass Faucets, or any style of Gate, made of any material, in all sizes from 10 to 600 gallons capacity.

Prices and descriptions upon application



FIG. 1079.

## EVEN DEN SHIPPING CAN.



FIG. 1080.

These Cans are made of heavy material, best workmanship. They are the highest priced, and the best Shipping Cans in the market.

Gallons,	1	2	3	5	10
Dozen,	\$3.50	\$4.85	\$6.00	\$7.50	\$13.00
Each,	.35	.45	.60	.70	1.25

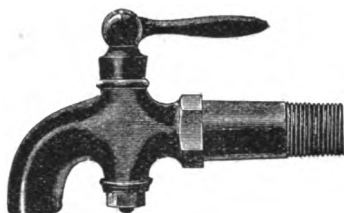


FIG. 1081. PETROLEUM FAUCET.

The keys of these faucets are bushed with brass.

Size,	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	1 in.
Each,	\$0.45	.50	.60	.75



FIG. 1082. SELF-CLOSING WATER FAUCET.

This can be used as a self-closing water faucet or not, as desired, by simply removing or replacing the spring.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$ in.
Polished Brass, each,	\$1.10	1.25	2.00

Can also furnish these, either Silver or Nickel plated.

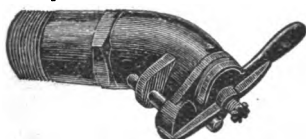


FIG. 1083. STEBBINS' GATE.

Inside diam.	$\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{1}{2}$ in.
Each,	\$0.30	.35	.40	.50

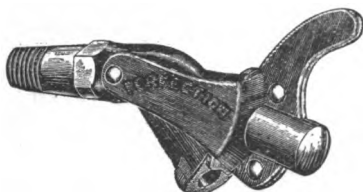


FIG. 1084. PERFECTION GATE.

This Gate has been on the market for the past seven years. It is warranted to hold any kind of liquid from the thickest

syrops and varnishes to the thinnest fluids, such as benzine, naphtha, etc.; is self-adjusting, compact and strong. In our judgment one of these Gates is worth half-a-dozen of any other kind. The measurements given in table are inside. We can supply various other sizes not given in list.

Size,	$\frac{1}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2 in.
Jap. Iron,	\$0.65	\$0.75	\$0.95	\$1.25	\$1.75
Pol. Brass,	1.65	2.50	3.25	4.00	5.00



FIG. 1085. GRAPHITE OR BLACK LEAD.

This is used dry for steam and air cylinders, and mixed with fats or oils for a lubricant. It can often be used where oil or grease cannot be applied. It is good for preventing hot boxes, and is equally useful for either wood or metal friction surfaces, and on loom and spindle work, where oil or grease will spoil the fabric.

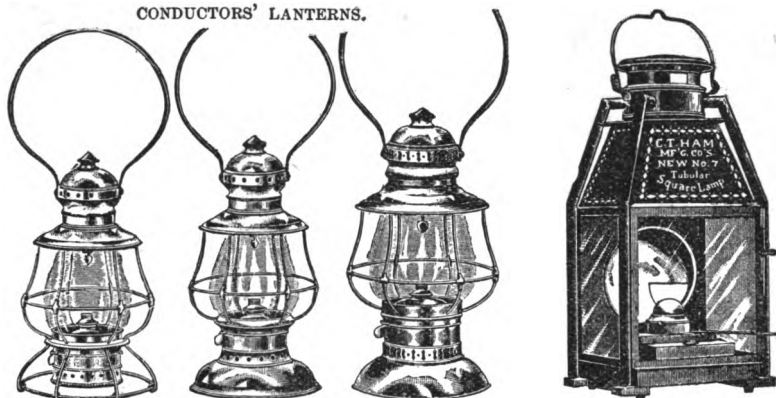
The Dixon Graphite is perfectly pure, and is much finer in quality than the black lead ordinarily sold. It comes in packages of sizes, as given in table below:

The  $\frac{1}{4}$ ,  $\frac{1}{2}$  and 1 lb. packages are paper can; the 5 and 10 lb., tin cans with screw top, and the 25 and 50 lb., wooden boxes.

Size,	$\frac{1}{4}$	$\frac{1}{2}$	1	5 lbs.
Each,	\$0.10	.15	.20	.85
Size,	10	25		50 lbs.
Each,	\$1.60	3.50		6.50

We can also furnish, when desired, any of the Jos. Dixon Crucible Co's products, among them being Smear Grease, Car Grease, Machinery Grease, Graphite Grease for wire ropes, Silica-Graphite Paint, Black Lead Facings, Core Wash, and Graphite for electrotypers.

## CONDUCTORS' LANTERNS.



1432. NO. 90. 1433. PULLMAN. 1434. NO. 95. 1437. TUBULAR SQUARE LAMP.

No. 90, Brass, \$4.00; Nickel-plated, \$4.80. Pullman, Brass, \$4.00; Nickel-plated, \$4.80. No. 95, Brass, \$2.50; Nickel-plated, \$3.25.

We can furnish any of these Lanterns with green, blue, or red globes, or one-half green, blue, or red, when desired.

These lamps give a very bright light, and will not smoke or blow out in the strongest wind. They are especially adapted for use in warehouses, saw-mills, railroad stations, etc., etc. They have silvered glass reflectors and outside wick regulator.

No. 116, \$3.50, 1 inch wick, 6 inch reflector; No. 117, \$4.90, 1½ inch wick, 8 inch reflector; No. 115, \$6.35, 1½ inch wick, 12 inch reflector.

The No. 116 measures 17; the No. 117, 22½; the No. 115, 24½ inches in height, other dimensions in proportion.

## TUBULAR HANGING LAMP.

(Not illustrated).

No. 113, \$3.50 each, has 1 inch wick; No. 111, \$4.15 each, has 1½ inch wick.

## DARK LANTERNS.

These are the Police or Watchmens' Dark Lanterns; finely finished and strong; parts all riveted together, and the glasses are of the best quality, fire-polished.

The Tin Lanterns are nickel-plated, and the Brass highly polished.

FIG. 1438.

No. 730,	\$1.20,	2½	inch lens,	Tin,	N. P.
No. 740,	1.50,	3	"	"	"
No. 70,	2.25,	2	"	"	Brass.
No. 72,	2.50,	2½	"	"	"
No. 74,	3.25,	3	"	"	"

DO NOT Cut or Tear the pages of this catalogue, as that destroys the book for future reference.



FIG. 1435.

## R. R. LANTERN.

No. 43, ea. \$0.75

per doz., \$7.50. FIG. 1436. TUBULAR.

Fig. 1436 represents the Tubular Side Reflector Lamps. These Lamps are especially adapted for use in stores, warehouses, barns, engine and boiler rooms, or any place where a strong light is required. They have silvered glass reflectors, and are finished in blue japanned.

No. 71, each \$1.00; per dozen, \$11.00; has 5 inch reflector, and ½ inch wick.

No. 72, each \$1.35; per dozen, \$14.00; has 6 inch reflector, and 1 inch wick.

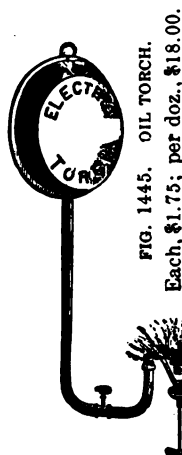


FIG. 1445. OIL TORCH.  
Each, \$1.75; per doz., \$18.00.

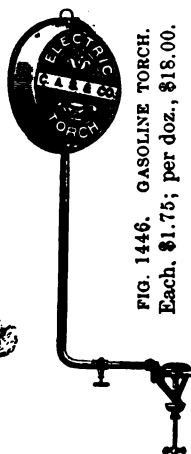


FIG. 1446. GASOLINE TORCH.  
Each, \$1.75; per doz., \$18.00.

The Oil Torches, Fig. 1445, are largely used in foundries, blacksmith shops, machine shops, tunnels, etc.; principally for indoor use. They make a brilliant light. Burn best water-white oil.

Gasoline Torches, Fig. 1446, are used largely by trades desiring a heavy, bright light, and for outside use generally; cannot be blown out by a heavy wind.

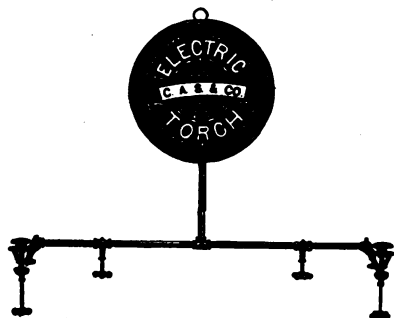


FIG. 1447. DOUBLE GASOLINE TORCH.  
Double Gasoline Electric Torch; each, \$2.75; per doz., \$30.00.

Extra Burners, suitable for any torch, each, \$1.25; per doz., \$12.00.

The Jumbo Torch (not illustrated) is the largest and most powerful light of this kind we know. It has three times the lighting capacity of the regular torch, and the cost of operation is less in proportion. Price, complete, each, \$2.75; per doz., \$30.00. Extra Burners, each, \$1.75; per doz., \$18.00.

## GASOLINE FIRE POTS AND TORCHES.

Gasoline Fire Pots were first placed upon the market in somewhat crude form, about ten years ago. Originally they were intended more especially for the use of plumbers and tinsmiths, but their great advantages have led to their being used for an endless variety of purposes.

Up to the present time there have been issued two hundred and eighty-six patents, based upon various forms of burners and general construction.

The line of Gasoline appliances which we show here is uncommonly complete, and the goods are, we believe, superior in all respects. A very desirable feature of these goods is, that the tanks are stamped out of sheet brass  $\frac{1}{4}$  inch thick, which makes them practically indestructible. This refers to all Torches and Fire Pots from Figs. 1448 to 1453 inclusive.

We are prepared to furnish to order, Torches, Burners and Heaters for any purpose that may suggest itself to our customers, and will be pleased to furnish any information desired.



FIG. 1448. NO. 1 HELPER. \$5.40.

The No. 1 Helper is the best "all around" Pot. It is safe, durable, simple to handle and control. Can be instantly changed from an intense heat to a low fire or the reverse. Stands 12 inches high, its base being 9 inches in diam. It will run an ordinary day's work on a half gallon 74° (or stove) gasoline, without any attention but a few minutes pumping with the rubber bulb to keep up the necessary air pressure. It gives a high,

steady, smokeless, odorless, and continuous heat. For indoor work it is the cleanest Pot in use, and on outside work is not affected by the highest wind.

The burner is flexibly mounted on the tank. The hood can be removed from the tank, by slacking back on the thumb-screw. The burner can be reversed and used in any position as a torch, for thawing out pipes, melting joints, burning paint from roofs, unsoldering pipes, "burning" and retinning galvanized iron, tempering tools, starting joints, melting anti-friction metal, etc. Simple and ample means are provided for cleaning out burner should it become "clogged."



FIG. 1449. NO. 2 HELPER. \$8.50.

Has two burners, with large hood for those using large pots. By detaching the hood, both burners can be effectively used in melting out "caulked" joints, etc. This is the most powerful heater used in the plumbing trade and is especially adapted for roofers. Will heat 8, 10 or 12 lb. irons for constant use, and can not be "blown out" by any wind that a roofer may work in; the irons remain clean, and the handles cool. Good and heavy brazing can be done by the proper management of the two burners. The pot being double the ordinary capacity, is too heavy for ordinary jobbing, but is just right for heavy contract work, or as a shop forge.

Best Rubber Bulbs, 30 cents each, postpaid. Can furnish Burners, Air Valves, etc.

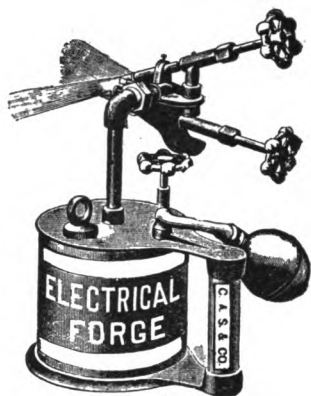


FIG. 1450.

#### GASOLINE ELECTRIC FORGE. \$5.40.

This Forge is especially made for electricians, plumbers, tinner, roofers and engineers. It is safe, durable, easily repaired, has a reversible burner that can be used in any position, and will not blow out in a gale of wind. Can be used as a blow pipe torch or a Fantail Heater, and can be instantly changed from an intense heat to a feeble flame, or the reverse. We mount these torches double, and as such they are used by Coppermiths, Cycle Makers, and others for braizing, by Ice Machine men, Glass Blowers, and in any trade requiring a strong and steady flame without the use of a bellows.

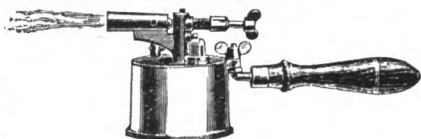


FIG. 1451.

#### DIAMOND GASOLINE TORCH. \$3.25.

This is the most convenient little Torch in the market; it is made of brass, and the burner is so constructed that the flame can be regulated to suit the work.

It is made for light work, by Plumbers, Gas Fitters, Electricians, Painters, Jewelers, etc.

The tank holds about half pint gasoline. The handle can be adjusted at any angle to suit the operator, or it may be detached to carry in pocket. The flame is very strong, and is not easily blown out.

**FIRE! FIRE!! FIRE!!!**

Appliances for fighting fire are coming to be considered a necessity in manufacturing establishments, as well as public buildings and institutions. It is singular how indifferent most people are regarding fire protection, until their attention is forcibly directed to the matter by fires in their vicinity or on their own premises.

There are many concerns who pay out yearly, hundreds and even thousands of dollars for insurance, and yet with gross indifference or neglect, depend upon a few wooden pails (usually empty or falling to pieces) as their sole protection against fire (We speak knowingly, because we have been there).

Less than a month ago, a large mercantile establishment, located within 200 yards of our premises, took fire at mid-day, and burned completely out. Seven lives were lost, and \$500,000 worth of property destroyed. We believe that one or two Fire Extinguishers used at the start, would have prevented the spreading of this fire.

**OILY WASTE CANS.**

1393. WASTE CAN.

It is a well known fact that cotton waste saturated with oil will ignite spontaneously, under certain conditions when exposed to the air. Many disastrous fires can be traced to this cause, and no doubt a goodly proportion of "mysterious" fires are the result of the careless disposal of oily waste.

The Oily Waste Can, shown in above cut, has self-closing cover, with improved spring attachment. These Cans are made without the use of solder, and are galvanized after being put together. We carry in stock one size, which is 11x14 inches in diameter, and 15 inches high. Price, each, \$1.40; per doz., \$15.00.

We can furnish to order a variety of other sizes, from 12 to 24 inches in diam. and 18 to 36 inches in height, also rectangular cans. Sizes and prices will be given upon application.

There are lots of **GOOD THINGS** in the market that are not shown in this book. Some of them we can tell you about, if you will write us

**FIRE EXTINGUISHERS.**

FIG. 1394. BABCOCK. Buildings and public buildings, has a capacity of 6 gallons.

Price, each, \$35.00.

The "Pony" size holds 3 gallons; price \$25.00.

The Babcock Fire Extinguisher, which we illustrate here, is too well known to require an extended description. It is claimed that each gallon of their contents will extinguish as much fire as 40 times its own bulk of water.

Furnished in two sizes; the regular size, most commonly used about manufacturing establishments and public

FIG. 1396. FIREMAN'S AXE.  
Each, \$2.00; per doz., \$21.00.

FIG. 1397. GALVANIZED FIRE BUCKET.

The Round Bottom bucket is coming into very general use for purposes of fire protection. The common style of bucket is very apt to be taken from its place to be used for ordinary purposes, and when most needed, is apt to be either empty or somewhere else. The Round Bottom bucket is hung up, and cannot very well be used for any other purpose than that for which it is intended.

**PLAIN BUCKETS.**

Size.	Each.	Per doz.
12 qt.	\$0.38	\$3.75
14 "	.40	4.00

**ROUND BOTTOM.**

Size.	Each.	Per doz.
12 qt.	\$0.50	\$5.00
14 "	.55	5.50

Covers for Fire Buckets, each, \$0.18; per doz., \$1.75.





FIG. 1401.

FIG. 1402.

STORE OR WAREHOUSE HANDY TRUCK.  
TRUCK—HALF-IRONED.

The "Handy" Truck, Fig. 1402, is strong, well made, and very reasonable in price. Made in but one size, 46 inches long; upper bar 17 inches wide, lower bar 12 inches wide. Price, each, \$2.25

#### PRICE LIST STORE TRUCKS.

No.	Half Ironed.	Full Ironed.	Width.	Length.
1	\$3.00	\$3.45	19	47
2	4.25	4.75	20	52
3	5.40	6.00	22	56
4		8.40	24	60

#### HOTEL TRUCKS.

These Trucks are the same in style as shown in Fig. 1402, but have heavy rubber tires on the wheels, preventing the noise. Are especially adapted for Hotels, Carpet and Glassware Houses. No. 1, \$5.25; No. 2, \$7.25.

We carry in stock and can furnish Steamboat, Barrel and Railroad Trucks, all sizes and styles.



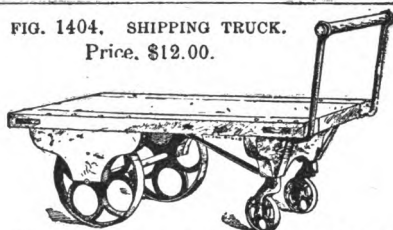
FIG. 1403. SKIDS.

The 6 and 7 ft. Skids have two iron cross bars, other sizes three.

Lgth.	6	7	8	9	10	12 ft.
Each,	\$2.65	3.00	3.75	4.50	5.25	6.50

FIG. 1404. SHIPPING TRUCK.

Price, \$12.00.



For general use in shipping and packing room, warehouses, etc. Platform 30x50 in., made of hard maple. Large wheels, 16 in. diameter, on  $1\frac{1}{2}$  inch axle. Small wheels 6 inches diameter.

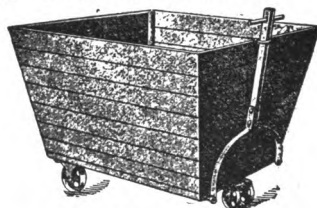


FIG. 1405. BOX TRUCK.

No. 0, \$6.00; platform 20x28, 20 in. deep.  
No. 00, 7.00; " 24x36, 20 " "

Designed for use in factories or stores, in handling small pieces, packages, etc. Adapted also for shavings and sweepings. The rigid wheels are 5 inches in diam.; casters, 4 inches.

FIG. 1406.

WAREHOUSE TRUCK

No. A, \$6.00, 24x36,  
7 $\frac{1}{2}$  inches high.  
No. B, \$8.00, 30x48,  
8 $\frac{1}{2}$  inches high.

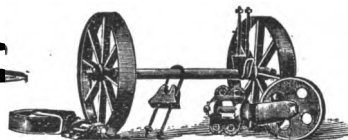
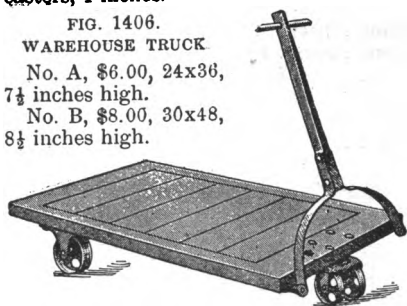


FIG. 1407. TRUCK IRONS.

We sell these Truck Irons largely to concerns who are in a position to furnish

the woodwork themselves. The prices are for the Irons only, all complete ready for the wood-work. Trucks can be made of any length or width desired. The Axles are of 1 inch steel, and 28½ inches long, unless otherwise ordered.

Number	Per Set.	Main Wheels.	Cent. Wheels.
1	\$4.25	10 x 2½	5 x 2
2	4.50	10 x 3	5 x 3
3	5.00	16 x 2½	8 x 2

We can furnish Stake Irons when desired, at \$0.50 per set of 4.

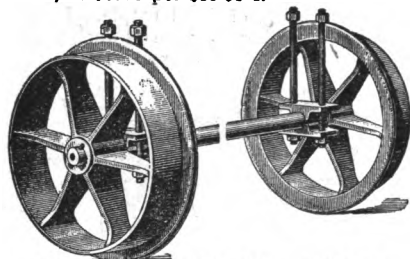


FIG. 1408. LUMBER TRUCK WHEELS.

These Wheels are very strong. The price list includes 4 Wheels, 2 Axles, 4 Boxes, and 8 Bolts for 10 inch timbers. The wheels run loose on axle, and are in position by the boxes on inside, and the washers and cotter-pin on the outside of wheel. Prices are based on 3 ft. gauge track. When ordering, give distance between track.

Diam. Wheel, 12	14	16
Diam. Axle, 1½	1½	1½
Price, \$13.50	16.00	18.50
Diam. Wheel, 18	20	24
Diam. Axle, 1½	1½	1½
Price, \$21.00	24.00	27.50

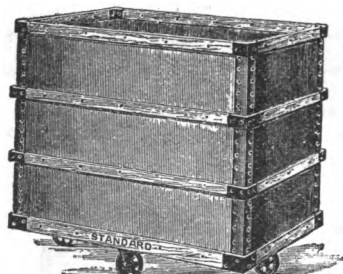


FIG. 1409. FIBRE ORDER TRUCK.

These boxes are used largely by manufacturers and wholesale dealers in getting out country orders.

The bodies are made of dark red fibre, and the bands of hardwood. The sizes given here are the most commonly used. We can furnish other sizes when desired.

Number.	Price each.	Length.	Width.	Depth.
A	\$9.50	32	22	24
C	10.00	36	24	24
E	10.50	36	24	24
G	11.00	38	26	24
L	12.00	40	28	30



FIG. 1410.  
FACTORY TRUCK  
Price, \$7.00.

This is the standard truck for general factory use. Frame and stakes made of dry maple, well joint-bolted together. Castings are strong, large wheels have solid shaft full width of truck. Wheels revolve on shaft, allowing truck to be turned in its own length. Large wheels 14 in. diam., 2½ in. face. Casters 6 in. diam., 1½ in. face. Platform, 25x48 in. No. 20 Factory Truck, \$7.50 Similar to No. 2, but with Iron Corner Pockets, in which removable stakes are used.



FIG. 1411  
ANTI-FRICTION  
CASTER.

The Caster revolves on steel rollers, or discs, and relieves all friction upon the pivot or strain upon the fastening screw. Easy in action, strong, and durable.

We price here the style shown in cut, with iron wheel. We can furnish all

sizes up to 2 inch, with round plate, and with lignumvitas or brass wheels.

Number.	Set of 4.	Size Wheel.	Size Plate.	Working Capacity.
182	\$0.23	1½	1½	60 lbs.
183	.33	1½	1½	125 "
184	.43	1½	1½	300 "
186	.55	2	2½	500 "

#### TRUCK CASTERS.

Number.	Set of 4.	Size Wheel.	Work. Cap.
168	\$1.20	2½	1200 lbs.
190	1.50	3½	1800 "
192	5.00	4	3000 "
195	12.50	6	6000 "

#### YALE CASTERS.

We can furnish the Double-Wheel Yale Casters, in a variety of sizes, with wheels from 1 to 5 in. Prices upon application.

#### STEEL AND BRASS BALLS.

The use of Balls in machinery and other places to reduce friction, is as yet in its infancy, but when the proper application is better understood by designers, the number of places that will suggest themselves are legion.



FIG. 1412. HARDENED STEEL BALLS.

These Balls are made from fine quality (too) steel, hardened and ground, and do not vary more than  $\frac{1}{100}$  of an inch from the given size. The smaller sizes (up to  $\frac{1}{2}$  inch) are special Bicycle sizes. Of these sizes any number up to 100 can be sent by mail for 5 cents, postage.

Size,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$
Per 100, \$:	1.00	1.00	1.00	1.20	1.50	
Per Doz.,	.15	.15	.15	.15	.20	.25
Size,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$
Per 100, \$3.00	3.40	4.00	5.20	8.00	11.20	
Per Doz.,	.45	.50	.60	.80	1.20	1.65

We can furnish intermediate sizes, also larger sizes up to 3 inches in diam.

#### BRASS BALLS.

These are used in Ball Check Valves, and for many other purposes.

Size,	$\frac{1}{8}$	$\frac{1}{4}$	1	1½
Each, \$0.40	.43	.50	.67	
Size,	1½	2	2½	2½
Each, \$1.00	1.85	3.00	3.50	
Size,	3	3½	4	
Each, \$4.00	4.65	6.00	8.75	

#### STEEL BARROWS.

Steel Barrows are coming into very general use. They combine great strength and durability, with comparative lightness. For many kinds of work, a Steel Barrow will outwear six wooden ones; they are now furnished at much lower prices than formerly.



FIG. 1413. STYLE A.

The tray is pressed from a single piece of steel, and is so shaped and placed upon the frame as to bring the greater part of the load over the wheel.

A-1, \$5.25, tray of 16 gauge steel; capacity, 3 cubic ft.; weight, 70 lbs.; wheel 17 inch diam.; tire,  $1\frac{1}{2} \times \frac{1}{4}$ ; spokes,  $\frac{1}{2}$  in. axle,  $\frac{1}{2}$ . For moving ashes, earth, etc.

A-3, \$6.50, tray of 12 gauge steel; capacity, 3 cubic ft.; weight, 70 lbs.; wheel, 17 inches diam.; tire,  $1\frac{1}{2} \times \frac{1}{4}$ ; spoke,  $\frac{1}{2}$  in. axle,  $\frac{1}{2}$ . For machine shops, foundries, furnaces, rolling mills, etc.

B-1, \$5.75. This is the same as No. A-1, excepting that the tray is larger, and has a capacity of 5 cubic ft.

B-3, \$7.00. Same as No. A-3, excepting that tray has a capacity of 5 cub. ft.



FIG. 1414. SQUARE TRAY BARROW.

This style of Barrow is desirable for

handling coal, ashes, etc. It dumps over the end, without running back on the operator.

No. 0, \$12.75, trays made of No. 12 gauge steel, well lapped at the corners, and has a rim riveted around the top. Length of tray, 42 inches; width, 33 inches; capacity, about 5 bushels of coal.

#### TWO-WHEEL BARROWS.

Same general style as Fig. 1414, but with two wheels. Used for handling coal, ashes, and charging furnaces; is also useful for handling castings..

No. 1, \$21.50, length of tray, 44 inches; width, 36 inches; wheels, 20 inches diam., axle, 1 inch; capacity, 6 bushels of coal.

No. 2, \$29.00; length of tray, 48 inches, width, 40 inches; axle, 1½ inch; capacity, 8 bushels of coal

#### OTHER STYLES

We carry in stock, and can furnish, a great many other styles of Barrows, such as Contractors', Wood Frame Steel Tray, Pig Iron, Furnace Charging, Brick, etc.

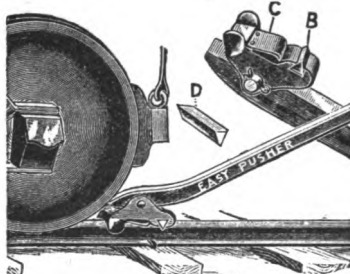


FIG. 1415 THE "EASY" CAR PUSHER.

This is a most convenient device for moving cars on switches and sidings, it weighs but 20 lbs., and is easily handled. Will work on any track: rough, greasy, icy, or wet rails do not effect its operation. Price, each, \$5.00



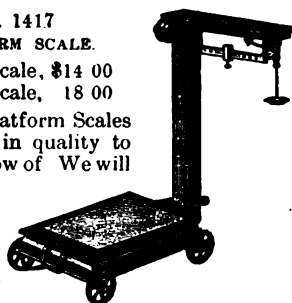
FIG 1416. POSTAL SCALE.

No 601, \$2.70; capacity, ½ to 8 oz.  
No 613, 3.60; " ¼ to 16, oz.  
No 606, 10.80; " ½ oz. to 6 lbs.  
(double beam.)

FIG. 1417  
PLATFORM SCALE.

600 lb Scale, \$14 00  
1200 lb Scale, 18 00

These Platform Scales are equal in quality to any we know of. We will guarantee them as regards accuracy and wearing quality.



The wood work is of hardwood, finished in the natural grain, and they are handsome goods. Besides this, they are very reasonable in price.



FIG 1418 DORMANT WAREHOUSE SCALE.



FIG. 1419 WATER COOLER.

This Water Cooler is intended for offices and shops. It is made of two thicknesses of wood, lined with a heavy galvanized iron tank; in the center of tank is a galvanized iron ice receptacle, thus keeping

the drinking water separate from the melted ice.

No.	Each	Diam	Height.	Tot. Capac'y.
1	\$7.00	13 in.	19 in	6 gals.
2	7.50	14½"	21½"	8 "
3	10.00	17 "	25 "	13 "
4	20.00	21 "	32 "	30 "

CLIPPINGS FROM "THE WOOD-WORKER" (*Indianapolis*).**GENUINE BABBITT.**

By W. S. H.

I have read many interesting articles in these columns about babbitting boxes, but as yet no one seems to have mentioned the important factor of quality in so-called "babbitt." This I consider as important as method in running boxes. Most any handy man around a mill can, after a few attempts, run a very fair box. His method will vary according to conditions, and if his metal is of the usual dark and brittle zinc-and-lead variety furnished by supply houses under some high-sounding name, he soon becomes an expert at the art, because of the altogether too frequent renewals necessary; and he then "cusses" the machine builders for using babbit where, he believes, brass alone should have been fitted.

Among other cases of chronic rebabbing, the side-head boxes of our flooring machine were particularly aggravating—wouldn't last over two weeks with the best of care, constant attention, adjusting and oil. I tried every brand of metal on sale in the local market. Some of it would cut out like cheese; others would break all up or work loose in box and pinch and heat. I had the journals turned off and tried the best of oils, and then graphite. I then bunned the engineer of an English tramp steamer into selling me a 25-pound chunk of imported metal made by Mr. Babbitt himself and stamped with his name and coat of arms—but that lot didn't last long and I couldn't get any more of it.

Finally, I got hold of a catalogue issued by a reliable firm, that sold babbit metal for just what it was. They had babbit of five different grades, and stated in catalogue that you "Got just what you paid for." Their 6-cent babbit wasn't called by any fancy name, and sold at three or four times the price, and their best babbit was made from the original Babbitt formula and given in catalogue.

I got 50 pounds of their best and applied it to side-heads at once—and didn't have to run them again for 16 months.

I haven't used a pound of anything else since. It is stamped "Genuine Babbitt," is almost as white as silver, and so tough I had trouble in breaking the bars with an axe. It is very different in appearance from the zinc-and-lead mixtures so common, and will wear like brass, being composed of pure tin, antimony and copper. One of the brasses on the engine crank-pin gave out, and I replaced it with a duplicate of this babbit and run it nearly a year.

For slow-speed bearings most any old stuff will do. Even common solder is a fair article, but for high-speed cutter-heads something with backbone in it is necessary if long, steady runs, and good work are objects. I wrap the cylinder journals with paper, pour metal, paint journals with a thick coat of red lead, cut oil channels, then scrape to a fit as evidenced by turning journals in the box, and then am through with it for two years at least.

Did you ever notice how sand or grit sticks to a cake of soap when you let it fall to the floor? Well, grit sticks in babbit precisely the same way if it once gets in the box, and will cut the journal full of ridges if not carefully scraped out. Emery wheel arbors, if babbitted, are a good illustration in this instance. Sometimes our oil has sand in it, considerably more than necessary.

**YOUR OWN TOOLS.**

By R. E. T.

A great many men think it does not pay them to invest in tools that will help them perform more work in a day, or to have nice, neat-looking tools and tool box. When I was working for a firm by the day, turning, or at other machine work, I found it profitable to myself as well as my employers, to provide myself with all the conveniences possible. I know it has been the source of getting me a steady place during dull times in several instances. Many firms furnish tools for their turners. I would much rather work with my own and think it by far the best for all concerned.

### ANTI-FRICTION METALS.

For a number of years past, there has been a great tendency among Babbitt and Anti-Friction Metal manufacturers to increase their profits by putting out a low grade metal, giving it a fancy title, and, by "Circus-poster" advertising and constant drumming, getting a high price for it.

The composition of the standard mixtures of anti-friction metals are so generally known, that it is not easy for manufacturers to get more than a smelter's profit; and the manufacturers of these metals cannot afford to give a "Chromo" with every sale, and in fact rarely employ traveling men.

With the "Fancy-brand" manufacturer the case is quite different, and the "woods are full" of agents, selling the greatest and best Babbitt Metal on earth. They can well afford to spend a whole day's time on a hundred pound order, as they usually get from 18 to 30 cents per lb. for metal that costs them from 5 to 8 cents per lb. to make.

For the last two or three years, there has been a "Kilkenny Cat" fight between several of the leading fancy brand Anti-friction Metal manufacturers. "When thieves fall out, honest men get their dues." One of the results of the fight has been to expose quite thoroughly the different compositions of the various alloys, and here are some of them:

No. 1.	No. 2.	No. 3.
Lead, 78.27	Lead, 76.14	Zinc, 92
Antim. 16.	Antim. 17.82	Cop'r, 3.
Tin, 5.73	Tin, 6.04	Tin, 5.
No. 4.	No. 5.	No. 6.
Lead, 79 11	Lead, 80.	Zinc, 81 46
Antim. 15 73	Antim 16	Cop'r, 1 25
Tin, 3.64	Tin. 4	Tin, 15.71
Iron, 1.52		Lead, 1.58

The actual cost of the above alloys runs from 5 to 8 cents per lb., and they are sold at prices ranging from 14 to as high as 30 cents per lb.

### OUR METALS.

The combination of Lead, Antimony, Tin and Copper has proved to be the best for Anti-friction purposes, and all the difference in price should arise from the greater or less quantity of tin used, that being the most costly ingredient.

We carry in stock five grades of Babbitt Metal, and these metals are simply standard mixtures; can be depended upon for

uniformity, only the best of material being used, and the quality fitting price.

The lower-priced Metals all have their proper uses, and there are many places where a high-priced Metal is unnecessary and extravagant. For general purposes our "C," "D" and even the "E" brand will prove acceptable

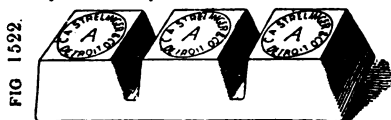


FIG 1522.  
"A" GENUINE BABBITT. Per lb., \$0.30.

In comparing prices of Genuine Babbitt with other metals, one important fact must be borne in mind: Genuine Babbitt being composed largely of tin, has less specific gravity, and a job that would require 25 lbs. of Genuine would take from 30 to 35 lbs. of the cheaper grades, which are composed largely of lead.

We sell more of our "A" brand Genuine Babbitt than any other. The formula of this is: Tin, 88 parts; Copper, 4 parts; Antimony, 8 parts. This when made properly and of the best stock, viz: Lake Copper, Cookson's Antimony, and Banca Tin, surpasses anything else that can be made as an Anti-friction Metal.

This Metal will run for years at 10,000 speed and 1,000 tons pressure.

### "B" BABBITT.

This Metal has less Tin than the Genuine and contains a percentage of lead. Price, per lb., \$0.22.

### "C" BABBITT.

The "C" Babbitt will be found superior to most of the fancy brands, and is suitable for general purposes. Per lb., \$0.14.

### "D" BABBITT.

This Metal is fully equal to most of the so-called "Best on earth" Babbitt Metals, and can be used to good advantage for light and medium work, running at fair speed. Price, per lb., \$0.11.

### "E" BABBITT.

This is equal to brands usually sold in hardware stores; it is composed of Lead, with a small percentage of Antimony added. Price, per lb., \$0.06½.

### SPECIAL NOTICE.

In order to get the best results, Babbitt Metal should be thoroughly stirred before pouring. The metals composing Babbitt being of different gravities, it is necessary that it should be well mixed.

*You get just what you pay for*

**SOLDER.**

For general purposes the best Solder is that composed of 51 parts of tin and 49 parts lead. The Solder that is generally sold by hardware dealers is what is known as "Half and Half," and the name is misleading, for at least 90 per cent of it is composed of not more than 45 parts of tin to 55 of lead. We have tested some brands, and find that they contain but 40 parts of tin, the balance being lead. For plumbers' use and some few other purposes, a Solder composed of 40 parts tin and 60 parts lead, answers very well.

We sell but the one quality, and we will guarantee all of our Solder to contain not less than 50 per cent of tin

**FIG. 1523 BAR SOLDER.**

The Bars are about  $\frac{1}{2}$  in. wide,  $\frac{1}{2}$  in. thick, 13 in. long, and weigh about  $1\frac{1}{2}$  lbs. Price, per lb., \$0.18

**FIG. 1524 TRIANGULAR SOLDER.**

Size about  $\frac{1}{8}$  in. x 15 in. long. Bars weigh about 5 oz. Price, per lb., \$0.20.

**FIG. 1525. WIRE SOLDER**

We can furnish this in different diameters, but carry in stock but one size,  $\frac{1}{8}$  in. Price, per lb., \$0.22.

The above named prices on Solder are for small quantities. Special prices will be given upon application, stating quantity

**FIG. 1526. SOLDERING COPPER.**

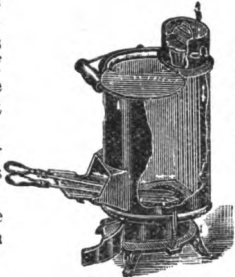
No	1	1 1/2	2	3	4	5	6
Wght., $\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	1 1/2	2	3	4 lbs
Each, \$0.25	25	.30	.45	.60	.85	1.15	

The above cut shows what is known as the Pointed Pattern, this being a most commonly used style. We can furnish to order Flat, Roofing, and Hatchet patterns.

**ELLIOTT'S SOLDERING FLUID.**

This is a non-corrosive fluid, and takes the place of the muriatic acid solution ordinarily used in soft soldering. It is recommended by the best concerns in the country. We carry it in 1 and 4 oz. bot-

tles; price, \$0.15 and \$0.30. Can furnish it in larger packages at a proportionately less price

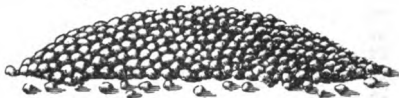
**BUTTLE'S CHARCOAL FIRE POT****FIG. 1527**

The Buttle's Charcoal Fire-pot, as shown in Fig. 1527, is the most popular one with tinsmiths. These Fire-pots are nicely Japanned

Price, each, complete, \$2.25.

**BRAZING SPELTER**

This is often times known as Hard Solder. It is used extensively by bicycle manufacturers, machine shops, copper-smiths, and model makers, for brazing or soldering steel, iron, copper, etc. There

**FIG. 1528 ROUND GRAIN SPELTER****FIG. 1529 LONG GRAIN SPELTER.**

are two varieties: The Round Grain, Fig. 1528, and the Long Grain, Fig. 1529. The Round Grain is quick running and is the most commonly used for general purposes. We sell 10 lbs. of this to one of the other. The Long Grain is harder, and is used more especially for large and heavy work.

We have three grades of the Round Grain. Fine, Medium and Coarse. Fig. 1528 shows the Coarse. Price, per lb., Fine, \$0.32, Medium, \$0.28; Coarse, \$0.25. Long Grain, " 28; " .25

Special prices in lots of 10 lbs. or more.

**SILVER SOLDER.**

We sell Silver Solder principally for use in Brazing or welding Band Saws, and it is also used where a nice, strong joint is required. Price, per oz. \$1.35;  $\frac{1}{2}$  oz. \$0.75.

## WEIGHT OF WIRE AND PLATES BY AMERICAN (OR B. &amp; S.) GAUGE.

No. of Gauge	Dec. Size. Inch.	WEIGHT OF WIRE PER 1000 LINEAL FEET.				WEIGHT OF PLATES PER SQUARE FT.			
		Iron. Lbs.	Steel. Lbs.	Copper. Lbs.	Brass. Lbs.	Iron. Lbs.	Steel. Lbs.	Copper. Lbs.	Brass. Lbs.
00	.32486	279.67	282.90	319.45	301.82	12.1823	12.3447	14.716	13.904
1	.28930	221.79	223.89	253.34	239.35	10.8488	10.9934	13.105	12.382
2	.25763	175.89	177.55	200.91	189.82	9.6611	9.7899	11.671	11.027
3	.22942	139.48	140.80	159.32	150.52	8.6033	8.7180	10.393	9.8192
4	.20431	110.62	111.66	126.35	119.38	7.6616	7.7638	9.2552	8.7445
5	.18194	87.720	88.548	100.20	94.666	6.8228	6.9137	8.2419	7.787
6	.16202	69.565	70.221	79.462	75.075	6.0758	6.1568	7.3395	6.9345
7	.14428	55.165	55.685	63.013	59.545	5.4105	5.4826	6.5359	6.1752
8	.12849	43.751	44.164	49.976	47.219	4.8184	4.8826	5.8206	5.4994
9	.11443	34.699	35.026	39.636	37.437	4.2911	4.3483	5.1837	4.8976
10	.10189	27.512	27.722	31.426	29.687	3.8209	3.8718	4.6156	4.3609
11	.09074	21.820	22.026	24.924	23.549	3.4028	3.4482	4.1106	3.8838
12	.08080	17.304	17.468	19.766	18.676	3.0303	3.0707	3.6606	3.4586
13	.07196	13.722	13.851	15.674	14.809	2.6985	2.7345	3.2598	3.0799
14	.06408	10.886	10.989	12.435	11.746	2.4032	2.4352	2.9030	2.7428
15	.05706	8.631	8.712	9.859	9.315	2.1401	2.1686	2.5852	2.4425
16	.05082	6.845	6.909	7.819	7.587	1.9058	1.9312	2.3021	2.1751
17	.04525	5.427	5.478	6.199	5.857	1.6971	1.7198	2.0501	1.937
18	.04030	4.304	4.344	4.916	4.645	1.5114	1.5315	1.8257	1.725
19	.03589	3.413	3.445	3.899	3.684	1.3459	1.3638	1.6258	1.5361
20	.03196	2.708	2.734	3.094	2.920	1.1985	1.2145	1.4478	1.3679
21	.02846	2.147	2.167	2.452	2.317	1.0673	1.0816	1.2893	1.2182
22	.02534	1.703	1.719	1.945	1.838	.9505	.9631	1.1482	1.0849
23	.02257	1.350	1.363	1.542	1.457	.8464	.8577	1.0225	.9660
24	.02010	1.071	1.081	1.223	1.155	.7537	.7638	.9105	.8602
25	.01790	.8491	.8571	.9699	.9163	.6712	.6802	.8108	.7661
26	.01594	.6734	.6797	.7692	.7267	.5977	.6057	.7220	.6822
27	.01419	.5340	.5391	.6099	.5763	.5323	.5394	.6430	.6075
28	.01264	.4235	.4275	.4837	.4570	.4740	.4803	.5726	.5410
29	.01126	.3400	.3430	.3913	.3684	.3808	.3861	.4630	.4340
30	.00995	.2750	.2775	.3125	.2962	.3087	.3130	.3750	.3500
31	.00875	.2250	.2275	.2575	.2437	.2562	.2605	.3150	.2925
32	.00765	.1875	.1890	.2150	.2037	.2162	.2205	.2650	.2425
33	.00665	.1562	.1577	.1800	.1700	.1825	.1868	.2250	.2075
34	.00580	.1312	.1327	.1512	.1425	.1550	.1593	.1900	.1750
35	.00505	.1094	.1109	.1250	.1175	.1300	.1343	.1600	.1475
36	.00440	.0937	.0952	.1080	.1012	.1137	.1180	.1400	.1287
37	.00380	.0812	.0827	.0937	.0875	.1000	.1043	.1225	.1125
38	.00325	.0712	.0727	.0812	.0750	.0875	.0918	.1100	.1012
39	.00275	.0637	.0652	.0725	.0662	.0787	.0830	.1000	.0912
40	.00230	.0575	.0590	.0650	.0597	.0712	.0755	.0900	.0812

These Weights are theoretically correct, but variations must be expected in practice.

## WEIGHTS, SPECIFIC GRAVITY AND MELTING POINTS OF VARIOUS METALS.

	W'ght per Cub. Inch	Specific Gravity.	Melting Points.		W'ght per Cub. Inch.	Specific Gravity.	Melting Points.
Aluminum Ingot,	.0926	2.56	1400°	Iron, Cast,	.2555	7.065	2250°
"    Bronze,	.2785	7.7		"    Wire,	.2811	7.774	
Antimony,	.2428	6.712	810°	"    Plates,	.2787	7.704	
Arsenic,	.2084	5.763	365°	"    Wrought,	.2817	7.788	2822°
Bismuth,	.3553	9.823	476°	Lead, Cast,	.4106	11.352	608°
Brass, Hard Sheet,	.3056	8.45		"    Sheet,	.4119	11.388	
"    Soft " "	.2997	8.3		Manganese,	.2894	8.	
"    Plate,	.3026	8.38		Mercury, 60°	.4908	13.569	39°
"    Cast,	.293	8.1		Nickel,	.3183	8.8	
"    Wire,	.2972	8.214		Platinum, Sheet,	.7982	22.069	3080°
Bronze Tobin,	.3021	8.379		Silver, Cast, Pure,	.3788	10.474	
"    Gun Metal,	.3165	8.75	1692°	Steel Plates,	.2823	7.806	2500°
Cobalt,	.3111	8.6		"    Wire,	.2838	7.847	
Copper Plates,	.3146	8.698		"    Cast,	.2839	7.848	2462°
"    Wire,	.3212	8.88		"    Bessemer,	.284	7.852	
"    Ingot,	.3113	8.608	1996°	Tin Cornish, Pure,	.2637	7.291	446°
Gold, Cast, Pure.	.4965	19.258	2590°	Zinc,	.2482	6.861	680°



## COMPARATIVE TABLES OF GAUGES.

AMERICAN OR B. & S. GAUGE.			ENGLISH OR STUBS' GAUGE.			PIANO OR MUSIC WIRE GAUGE.			WOOD, OR MACHINE SCREW GAUGE.		
No.	Size Decimal.	Nearest Fraction.	No.	Size Decimal.	Nearest Fraction.	No.	Size Decimal.	Nearest Fraction.	No.	Size Decimal.	Nearest Fraction.
00	.3648	$\frac{3}{8}$	00	.38	$\frac{1}{2}$	2	.0105		0	.0578	
0	.32486	$\frac{5}{16}$	0	.34	$\frac{1}{4}$	4	.0125		1	.0710	
1	.2893	$\frac{1}{4}$	1	.3	$\frac{3}{8}$	6	.015	$\frac{1}{16}$	2	.0842	
2	.25763	$\frac{1}{4}$	2	.284	$\frac{1}{4}$	8	.019	$\frac{1}{8}$	3	.0973	$\frac{3}{32}$
3	.22942	$\frac{1}{4}$	3	.259	$\frac{1}{4}$	9	.022		4	.1105	$\frac{1}{4}$
4	.20431	$\frac{1}{4}$	4	.238	$\frac{1}{4}$	10	.0245		5	.1236	$\frac{1}{4}$
5	.18194	$\frac{1}{4}$	5	.22	$\frac{1}{4}$	11	.027		6	.1368	$\frac{1}{4}$
6	.16202	$\frac{1}{4}$	6	.203	$\frac{1}{4}$	12	.0285		7	.1500	$\frac{1}{4}$
7	.14428	$\frac{1}{4}$	7	.18	$\frac{1}{4}$	13	.0305	$\frac{1}{8}$	8	.1631	
8	.12849	$\frac{1}{4}$	8	.165	$\frac{1}{4}$	14	.032		9	.1763	$\frac{1}{4}$
9	.11443	$\frac{1}{4}$	9	.148		15	.035		10	.1894	$\frac{1}{4}$
10	.10189		10	.134	$\frac{1}{4}$	16	.036		11	.2026	$\frac{1}{4}$
11	.090742	$\frac{1}{8}$	11	.12	$\frac{1}{4}$	17	.038		12	.2158	$\frac{1}{4}$
12	.080808	$\frac{1}{8}$	12	.109	$\frac{1}{4}$	18	.040		13	.2289	
13	.071961		13	.095	$\frac{1}{4}$	19	.042		14	.2421	$\frac{1}{4}$
14	.064084	$\frac{1}{8}$	14	.083		20	.043		15	.2552	$\frac{1}{4}$
15	.057068		15	.072		21	.0445		16	.2684	$\frac{1}{4}$
16	.05082		16	.065	$\frac{1}{8}$	22	.047	$\frac{1}{8}$	17	.2816	$\frac{1}{4}$
17	.045257	$\frac{1}{8}$	17	.058		23	.049		18	.2947	$\frac{1}{4}$
18	.040303	$\frac{1}{8}$	18	.049	$\frac{1}{8}$	24	.053		20	.3210	$\frac{1}{4}$
19	.03589		19	.042		25	.056		22	.3474	$\frac{1}{4}$
20	.031961	$\frac{1}{8}$	20	.035		26	.0605	$\frac{1}{8}$	24	.3737	$\frac{1}{4}$
21	.028462		21	.032	$\frac{1}{8}$	27	.064		26	.4000	$\frac{1}{4}$
22	.025347		22	.028		28	.0685		28	.4263	$\frac{1}{4}$
23	.022571		23	.025		29	.0715		30	.4520	$\frac{1}{4}$
24	.0201		24	.022		30	.076	$\frac{1}{8}$			
25	.0179		25	.02							
26	.01594	$\frac{1}{8}$	26	.018							
27	.014195		27	.016	$\frac{1}{8}$						
28	.012641		28	.014							
29	.011257		29	.013							
30	.010025		30	.012							
31	.008928		31	.01							
32	.00795		32	.009							
33	.00708		33	.008							
34	.006304		34	.007							
35	.005614		35	.005							
36	.005		36	.004							
38	.003965										
40	.003144										

TABLE OF DECIMAL EQUIVALENTS  
OF 8THS, 16THS, 32NDS, AND 64THS  
OF AN INCH.

8THS.	16THS.	32NDS.	64THS.
$\frac{1}{8}$ —.125	$\frac{1}{16}$ —.0625	$\frac{1}{32}$ —.03125	$\frac{1}{64}$ —.015625
$\frac{1}{4}$ —.25	$\frac{1}{8}$ —.125	$\frac{1}{16}$ —.0625	$\frac{1}{32}$ —.03125
$\frac{3}{8}$ —.375	$\frac{3}{16}$ —.1875	$\frac{3}{32}$ —.09375	$\frac{3}{64}$ —.046875
$\frac{1}{2}$ —.500	$\frac{1}{4}$ —.250	$\frac{1}{8}$ —.125	$\frac{1}{16}$ —.0625
$\frac{5}{8}$ —.625	$\frac{5}{16}$ —.3125	$\frac{5}{32}$ —.15625	$\frac{5}{64}$ —.078125
$\frac{3}{4}$ —.750	$\frac{3}{8}$ —.375	$\frac{3}{16}$ —.1875	$\frac{3}{32}$ —.09375
$\frac{7}{8}$ —.875	$\frac{7}{16}$ —.4375	$\frac{7}{32}$ —.21875	$\frac{7}{64}$ —.109375
	$\frac{1}{2}$ —.500	$\frac{1}{4}$ —.250	$\frac{1}{8}$ —.125
	$\frac{9}{16}$ —.5625	$\frac{9}{32}$ —.28125	$\frac{9}{64}$ —.140625
	$\frac{5}{8}$ —.625	$\frac{5}{16}$ —.3125	$\frac{5}{32}$ —.15625
	$\frac{11}{16}$ —.6875	$\frac{11}{32}$ —.34375	$\frac{11}{64}$ —.171875
	$\frac{3}{4}$ —.750	$\frac{3}{8}$ —.375	$\frac{3}{16}$ —.1875
	$\frac{13}{16}$ —.8125	$\frac{13}{32}$ —.40625	$\frac{13}{64}$ —.203125
	$\frac{7}{8}$ —.875	$\frac{7}{16}$ —.4375	$\frac{7}{32}$ —.21875
	$\frac{15}{16}$ —.9375	$\frac{15}{32}$ —.46875	$\frac{15}{64}$ —.234375
		$\frac{1}{2}$ —.500	$\frac{1}{4}$ —.250
		$\frac{11}{16}$ —.6875	$\frac{11}{32}$ —.34375
		$\frac{3}{4}$ —.750	$\frac{3}{8}$ —.375
		$\frac{13}{16}$ —.8125	$\frac{13}{32}$ —.40625
		$\frac{7}{8}$ —.875	$\frac{7}{16}$ —.4375
		$\frac{15}{16}$ —.9375	$\frac{15}{32}$ —.46875

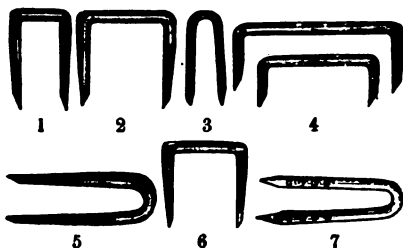
Unless otherwise instructed, orders for all sheet metals, excepting iron, steel and copper, also for brazed tubing, are filled according to the Brown & Sharpe (or American) gauge. Orders for wire of all kinds, also iron, steel and copper in sheets, and seamless tubing, according to the English (or Stubs') gauge.

Music Wire and Screw Gauges are used for nothing but music wire and screws.

Table of Metric Equivalents, see page 7.

**FIG. 1601. STEEL DOWEL PINS—BARBED.**

Although intended to take the place of the Wooden Dowel Pins formerly used for pinning sash blinds and doors, their use may be suggested for many other purposes. We carry them in stock made from No. 8 steel wire (about  $\frac{1}{8}$ ), and  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ , and  $1\frac{3}{4}$  inches long. Price, per lb., 5 cts.

**FIG. 1602. WIRE STAPLES AND TACKS.**

We carry in stock a large variety of Clamp, Basket, Clinch, Bed Spring, and Blind Staples, also Double-pointed Tacks, of which we illustrate a number of styles. Price will be named upon application, stating style, size and quantity required.

**FIG. 1603****CORRUGATED STEEL FASTENERS.**

These Fasteners are sold very extensively; they can be used for a great variety of purposes, such as fastening mitre and other joints, also in making boxes, etc.



The number indicates the number of corrugations; No. 2 is  $\frac{1}{2}$ ; No. 3,  $\frac{3}{4}$ ; No. 4,  $1\frac{1}{4}$ , and No. 5, 1 inch in width. In ordering, give length and number. Boxes contain 500 of a size.

**PRICE LIST PER 1000.**  
Length.

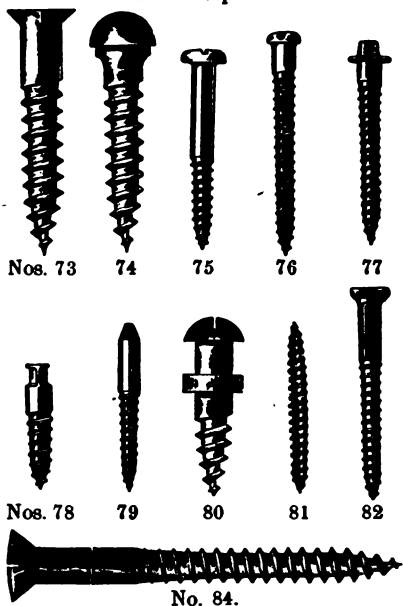
No.	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$
2	\$0.41	\$0.45	\$0.53	\$0.57	\$0.68
3	.57	.64	.75	.87	1.02
4	.72	.81	.98	1.10	1.32
5	.90	.98	1.40	1.43	1.65

**WOOD SCREWS.**

Changes in both list and selling prices of Wood Screws are of such frequent occurrence, that we deem it inexpedient to print prices.

We carry in stock a more than ordinary large line, comprising Flat Head Bright from  $\frac{1}{8}$  in. No. 0 to 6 in. No. 24; Flat Head Brass, Round Head Brass, Round Head Blue, and Round Head Nickle, from  $\frac{1}{8}$  in. No. 0 to 3 in. No. 20. Prices on any desired style of Screws will be named upon application stating quantity.

We can furnish to order Flat and Round Head Screws in Iron, Bright, Blue, Japanned, Tinned, Lacquered, Bronzed, Brass, Copper, Nickel or Silver-plated. Brass Screws Lacquered, Bronzed, Silver and Nickel-plated; also Screws made of Solid Bronze and Phosphor Bronze.

**FIG. 1631. SPECIAL WOOD SCREWS.**

The above cuts illustrate quite a variety of special forms of Wood Screws. These are made to order only, and cannot be furnished in small quantities. Prices will be named upon application giving exact dimensions and quantity required.



FIG. 1595

## CHURCH'S EXPANSION CASE BOLTS.

There are a number of styles of Expansion Bolts on the market, but we believe that the Church Patent is the strongest, simplest, and best bolt of this type.

Among other purposes for which Expansion Bolts may be used, are the hanging of Steam and Water Pipes in overhead arches and side-walls, fastening Iron Railings, Signs, Balconies, Fire Escapes, Guy Wires for Smoke Stacks, Telegraph Poles, etc., for Iron Shutters, Window and Door Frames, fastening down Bed Plates to engines and machinery of all kinds. There are endless other uses that will readily suggest themselves to mechanics.

This method of fastening does away with the use of lead, brimstone, cement, and wood plugging. The value of time saved will pay for the use of these Bolts, to say nothing about the gain in strength.

	Diameter.				
L'gth,	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$	$1\frac{1}{2}$
3 100.	\$6.85	\$9.70			
3 Doz.	1.05	1.45			
$3\frac{1}{2}$ 100	6.90	9.80	\$15.00		
$3\frac{1}{2}$ Doz.	1.05	1.45	2.20		
4 100	6.95	9.90	15.15	\$20.70	\$27.40
4 Doz.	1.05	1.50	2.20	3.10	4.10
$4\frac{1}{2}$ 100	6.95	9.90	15.25	20.95	27.70
$4\frac{1}{2}$ Doz.	1.05	1.50	2.30	3.15	4.15
5 100	7.00	10.00	15.40	21.20	28.00
5 Doz.	1.05	1.50	2.30	3.20	4.20
6 100		10.15	15.70	21.60	28.60
6 Doz.		1.55	2.40	3.25	4.30
7 100		10.30	15.90	22.00	29.00
7 Doz.		1.55	2.40	3.30	4.40
8 100		10.50	16.25	22.50	29.80
8 Doz.		1.60	2.45	3.40	4.50
9 100			16.50	23.00	30.40
9 Doz.			2.50	3.45	4.55
10 100			16.80	23.35	31.00
10 Doz.			2.55	3.55	4.60
L'gth, Case, $1\frac{1}{2}$	3	$3\frac{1}{2}$	4	4 in.	
Diam. "	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$	$1\frac{1}{2}$

The sizes as given in this list are the sizes of iron of which the Bolt is made—not the Case. The length and diameter of Case are given at bottom of table.

We can also furnish other sizes when desired.

## TURN BUCKLES.



FIG. 1596. HEXAGONAL TURN BUCKLE.

O—Opening between heads  $5\frac{1}{2}$  inches.

H—Length of Tapped Heads

L—Length without Bolt Ends.

T—Total length over all

These Turn Buckles are made from the best charcoal iron, contain 25 per cent more thread in the head than is common, and are stronger than any we know of. The shape admits of their being used with an ordinary wrench, no matter in what position they may be.

Diameter.	Each.	H.	L.	T
$\frac{1}{2}$ in.	\$0.30	$\frac{1}{2}$ in	$7\frac{1}{2}$ in	22 in
$\frac{3}{4}$ "	.32	$\frac{1}{2}$ "	$7\frac{1}{2}$ "	22 "
$\frac{1}{2}$ "	.34	$\frac{1}{2}$ "	$7\frac{1}{2}$ "	22 "
$\frac{3}{4}$ "	.36	$1$ "	$7\frac{1}{2}$ "	22 "
$\frac{1}{2}$ "	.38	$1\frac{1}{4}$ "	$7\frac{1}{2}$ "	22 "
$\frac{3}{4}$ "	.48	$1\frac{1}{4}$ "	$8\frac{1}{2}$ "	23 "
$1$ "	.57	$1\frac{1}{4}$ "	$8\frac{1}{2}$ "	24 "
$1\frac{1}{4}$ "	.66	$1\frac{1}{4}$ "	$9$ "	25 "
$1\frac{1}{2}$ "	.75	$1\frac{1}{4}$ "	$9\frac{1}{2}$ "	25 "
$1\frac{3}{4}$ "	.94	$2\frac{1}{4}$ "	$9\frac{1}{2}$ "	26 "
$2$ "	1.04	$2\frac{1}{4}$ "	$10\frac{1}{2}$ "	27 "
$2\frac{1}{4}$ "	1.13	$2\frac{1}{4}$ "	$10\frac{1}{2}$ "	27 "
$2\frac{1}{2}$ "	1.50	$2\frac{1}{4}$ "	$11\frac{1}{2}$ "	28 "
$3$ "	2.00	$3\frac{1}{4}$ "	$12$ "	29 "
$3\frac{1}{2}$ "	2.62	$3\frac{1}{4}$ "	$12\frac{1}{2}$ "	30 "
$4$ "	3.37	$4$ "	$13\frac{1}{2}$ "	32 "

We can furnish extra lengths to order. Prices upon application stating quantity.

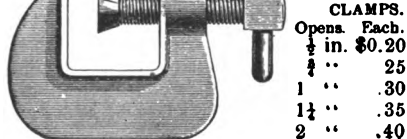


FIG. 1597. BRASS TURN BUCKLES

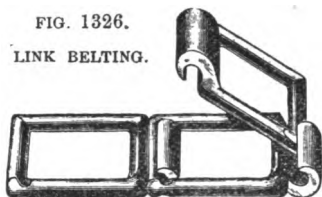
These small Turn Buckles will be found useful for many purposes. The length given is when screwed up. The movement of screw varies in the different sizes from  $\frac{1}{2}$  to 2 inches.

Length, $1\frac{1}{2}$	$2\frac{1}{2}$	3	$4\frac{1}{2}$	5
Each, \$0.20	\$0.25	\$0.30	\$0.40	\$0.45

Diam.	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$
FIG. 1598.				



SMALL BRASS CLAMPS.	
Opens $\frac{1}{2}$ in.	Each. \$0.20
$\frac{3}{4}$ "	.25
$1$ "	.30
$1\frac{1}{2}$ "	.35
$2$ "	.40

FIG. 1326.  
LINK BELTING.

The Link Belting, or Sprocket Chain, can be separated by simply folding the links almost double and sliding them apart, as shown in Fig 1326

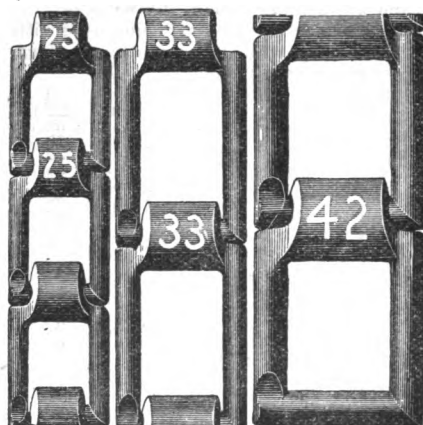
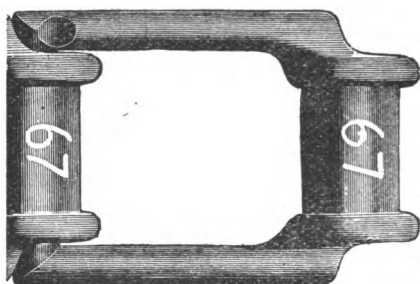
NO. 25.  
FIG. 1327.NO. 33.  
FIG. 1328.NO. 42.  
FIG. 1329.

FIG. 1330. NOS. 67 AND 77.

The above cuts are two-thirds size.

#### DIMENSIONS OF LINK BELTING.

We have made up the following table, giving the dimensions, and working strains of a number of sizes of Link Belting. The number or size is cast in top of link, as shown in Fig 1330 :

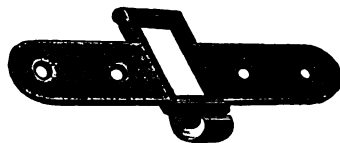
No.	Size Outside.	No.	Size Outside.
25	$\frac{1}{2}$ x $1\frac{1}{2}$	66	$1\frac{1}{2}$ x $2\frac{1}{2}$
32	$\frac{1}{2}$ x $1\frac{1}{2}$	67	$1\frac{1}{2}$ x $2\frac{1}{2}$
33	$\frac{1}{2}$ x $1\frac{1}{2}$	75	2 x $3\frac{1}{2}$
35	$1\frac{1}{2}$ x $1\frac{1}{2}$	77	$1\frac{1}{2}$ x $2\frac{1}{2}$
42	$1\frac{1}{2}$ x $1\frac{1}{2}$	78	$2\frac{1}{2}$ x $3\frac{1}{2}$
45	$1\frac{1}{2}$ x 2	88	$2\frac{1}{2}$ x $3\frac{1}{2}$
52	$1\frac{1}{2}$ x 2	93	$2\frac{1}{2}$ x 5
55	$1\frac{1}{2}$ x 2	103	$3\frac{1}{2}$ x $4\frac{1}{2}$
57	$1\frac{1}{2}$ x $2\frac{1}{2}$	108	$4\frac{1}{2}$ x 6



A-1



K-1.



K-6.



F-2.



C-1



E-1.

FIG. 1331. LINK BELT ATTACHMENTS.

The following list gives sizes of Chain for which Attachments can be used :

A-1,	Nos. 33, 42, 45, 55, 67.
K-1,	" 25, 33, 45, 55, 67, 77, 78, 88.
K-6,	" 25, 33, 42.
F-2,	" 55, 67, 77, 78, 88.
C-1,	" 25, 42, 45, 55.
E-1,	" 25, 33, 45, 55, 67, 77, 78.

#### LINK BELTING.

We illustrate a number of sizes of Link Belting and Attachments, but can furnish a great many other sizes besides those shown here; and also a large variety of Sprocket wheels.

Nos. 55, 77 and 78 are the same dimensions as Nos. 45, 67 and 88, but are heavier and will stand a greater working strain. Same Sprocket Wheels answer for both.

## PRICE OF LINK BELT AND ATTACHMENTS.

No.	Per Ft	Attachments, Each.	Working Strain.
25	\$0.10	\$0.02	75 lbs.
33	.10	.03	200 "
42	.12	.03	300 "
45	.12	.03½	350 "
55	.16	.04	450 "
67	.20	.07	700 "
77	.24	.07	800 "
78	.28	.11	1000 "
88	.35	.13	1200 "



FIG. 1332. SPROCKET WHEELS.

Following prices are for the Sprocket Wheels in the rough, not bored or set screwed. Will name prices on Finished Wheels upon application :

No. 25.			No. 33.		
Pitch Diam.	No. of Teeth.	Price, Each.	Pitch Diam.	No. of Teeth.	Price, Each.
2	7	\$0.24	3	7	\$0.38
2½	8	.26	4	9	.42
2½	9	.28	4½	10	.48
3½	11	.33	5½	12	.64
3½	12	.35	6½	15	.85
4	14	.39	7	16	.90
4½	16	.46	8½	19	1.05
6	21	.60	9½	22	1.12
7½	26	.78	12	27	1.50
8	28	.84	15½	34	1.90
10	35	1.00	18½	41	2.40
12	42	1.25	24	54	3.35
16	56	1.70			

No. 42.			Nos. 45 and 55.		
Pitch Diam.	No. of Teeth.	Price, Each.	Pitch Diam.	No. of Teeth.	Price, Each.
3	7	\$0.40	3	6	\$0.40
3½	9	.46	3½	8	.54
4½	11	.58	5½	10	.62
5½	13	.68	6	12	.70
6½	14	.72	7½	14	.96
8	18	1.00	8½	16	1.12
9½	22	1.22	9½	18	1.22
11½	27	1.52	10½	20	1.36
14	32	1.82	12	23	1.60
15½	36	2.00	14½	27	1.92
18	41	2.56	16	31	2.05
24	55	3.80	18½	35	2.56
			20½	39	2.86

## Nos. 67 and 77.

Pitch Diam.	No. of Teeth.	Price, Each.
4½	6	\$0.62
6	8	0.88
7½	10	1.05
8½	12	1.20
11	15	1.65
14	19	2.10
16½	22	2.60
18½	25	3.20
20	28	3.80
24½	33	4.50
28	38	6.20
32½	44	7.40

## Nos. 78 and 88.

Pitch Diam.	No. of Teeth.	Price, Each.
6½	8	\$1.06
8½	10	1.25
10	12	1.55
11½	14	2.06
14½	17	2.56
16½	20	2.92
20	24	3.90
24	29	4.64
28½	34	6.54
30½	37	8.12
33½	40	9.16
37	44	10.00

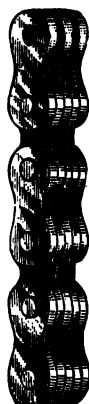


FIG. 1336. PULLEY CHAINS.



FIG. 1337. EYE END FASTEN'G

The above illustrations show a style of cable chain suitable for running on pulleys. - These chains are used for suspending doors, sashes, gates, and heavy weights, taking the place of rope.

Fastenings for Chains Nos. 30 to 110, as shown in Fig. 1338, 15 cents each; for Nos. 4, 5 and 6, 40 cents each. Pulleys for Cable Chains Nos. 30 to 110, 35 cents each; for Nos. 4 and 5, 65 cents each; and for No. 6, \$2.00 each.

Eye End Fastenings, Fig. 1337, for Chains 30, 10 and 110, 7 cents each.

*Good for heavy work.*

CLIPPINGS FROM "THE WOOD-WORKER" (*Indianapolis*).

## GRINDING KNIVES.

By E. L. O.

One of the particular things in operating wood-working machines, is Grinding Cutters. Many of us remember how formerly we had to improvise forms, and study up schemes to accomplish this part of our work. Rabbetting into a block of wood was one plan. Making a sweep, pivoted in the middle, so the end would just swing over the center of the stone, the knife bolted to a board, the grinder sitting on the board, which was pivoted to the end of the sweep to hold it in place, was another. There were many other ways, any of which made it a very dirty, undesirable job.

Bye and bye came the knife-grinding machine, to be made fast to a grindstone. This was a long step ahead, and, although it was still a dirty task, it helped the matter a great deal. The machine was warranted to grind straight, but the proof of the warrant was in the man who used it; it needed considerable skill to make the warrant hold good. Nevertheless, it was the pioneer of something better.

Not a long time elapsed before the emery grinder became a necessity, and with that necessity came the genius that has brought out the many kinds and styles of machines now in use. Now, no wood-working plant is complete without from one to six emery grinders in the different parts of the shops. We consider them now, one of the positive necessities. To have simply an emery grinder was not enough, and the automatic machine soon came to be the thing needful. Now most wood-working plants have a machine that works automatically.

It would be entirely out of place here to give preference to any of the different automatic machines. They are all good. The thing for the proprietor to consider is, to get or not to get an automatic grinder, as those not automatic are still made and used.

One of the great advantages of the automatic is economy of time. Another point is the quality of the grinding. The automatic feed grinds steadily and

evenly. There is consequently no danger from heating, while with the hand-feed the temptation, and quite as often the necessity, of crowding the wheel often heats the knife and destroys its cutting qualities by making it brittle. This is one of the things that should be guarded against. A brittle knife means little nicks, which cause the little scratches so often seen in finished lumber. There may be a nick without a brittle knife, but with one we are sure to find nicks. The time spent in filing, and the cost of files used in sharpening, ought to be a sufficient guard against burning knives on emery wheels. No one should allow himself, or others, to crowd a wheel so as to burn a knife and thus destroy the temper.

The cheapest machines are those which do the best work in the most rapid manner, with least cost of maintenance. First cost is one thing, last cost another.

Proprietors and managers should not cramp a mill in this matter of tools and appliances. It is better to have a fixture that you don't use but once in a year, than not to have it and be obliged to refuse a job because you have nothing to do it with. Don't hold a cent so near your eye that you can not see a dollar on the other side of it. I have known firms that would not get more than three sets of heads, and every time the work changed the heads would have to be. This is holding a cent pretty close. It hurts the proprietor more than it does the operator. When you want machine work to pay you must keep the machine at work, and not have more time spent setting up tools than in running the stuff.

Inventors of machines that are expected to revolutionize things generally, should post themselves before spending much money on their revolutionizers. It often costs them considerable to find out that their ideas were used and forgotten years ago.

THE DETROIT EMERY WHEEL CO.,  
MANUFACTURERS OF THE CELEBRATED  
HART EMERY WHEEL,  
AND  
EMERY GRINDING MACHINERY.

There is a lamentable amount of ignorance displayed by a great many users of Emery Wheels. We positively assert that there is no tool used in a shop that pays so large a per cent of profit on investment as a well managed emery wheel. We print the following suggestions from the Detroit Emery Wheel Co's Catalogue, and earnestly ask that they be carefully read and remembered:



FIG. 874.



FIG. 875.

"Although solid wheels have been in use for many years, and to-day are considered an absolute necessity as a tool in nearly all metal-working shops, still we think that quite a proportion of the mechanics using them are not as well informed in their use as they should be, and feeling that the interests of the manufacturer and consumer are mutual, and that what benefits one must benefit the other, we trust the suggestions we offer will be kindly received.

No one emery wheel can be made that will be just right for working all the different kinds of metal, so where more than one kind is to be worked with the same wheel the proportion of each should be stated in sending orders for wheels.

The speed of emery wheels is a subject of so much importance, that it should receive the consideration of all who use them.

As a rule, the durability of an emery wheel is in proportion to its speed; or, in other words, a wheel that would give en-

tire satisfaction at its proper speed would be quite certain not to give satisfaction if run at one-half or two-thirds speed.

Where all that is required is to grind away the most metal in the least time, we advise the regular speed of about 5,500 feet per minute; or the number of revolutions for each diameter as given in the accompanying price list.

The grinding of tools for either iron or wood-working is of such a nature that it can only be well done with a wheel that is made especially for that work, but with such wheels the most delicate tools can be shaped and sharpened better than in any other way.

Every shop should have a speed indicator, in order that the speed of its machinery could be known, especially its emery wheels.

In no case should wheels be run at a greater number of revolutions than the manufacturer of them advises. Probably very few of the mechanics of the age think, or perhaps, know, of the great increase of centrifugal strain that is given a wheel in proportion to an increase of the velocity.

No sane manufacturer would, for an instant, think of subjecting his steam boiler to a pressure two or three times as great as the

maker of it advises; and still emery wheels are run at a speed that increases the centrifugal strain upon them a number of times.

In this connection we feel it a duty to quote the following from a standard author upon this point

*"The centrifugal force of a body moving with different velocities in the same circle is proportional to the square of the velocity. Thus the centrifugal force of a body making ten revolutions a minute is four times as great as the centrifugal force of the same body making five revolutions in a minute. Hence in equal circles the forces are inversely as the squares of the times of revolution."*

The last thing done before our wheels are boxed is to test them at twice the number of revolutions they should be run at. This, as will be seen by reference to the preceding paragraph, insures their soundness when they leave our hands.

Grinding machines of all kinds should be set upon a solid floor, and where it is

practical we advise, for large machines especially, a foundation of masonry.

A strong and substantial rest should be used where the nature of the work will admit of it. In the matter of rests much care should be used in keeping them properly adjusted in relation to the wheel. As a rule, the rest should be kept close to the wheel. It is not an uncommon thing to find a workman at a wheel with the rest so far from it, and the work of such a nature that should it be drawn from his hands it would certainly be drawn between the wheel and rest. This, we believe, is a very common cause for the breaking of emery wheels, and many a workman has paid the penalty with his own life for his carelessness in this respect alone.

Wheels should always be kept true with some tool suitable for the purpose. For this work we consider the Black Diamond or Carbon the best. The Huntington Dresser, however, is a good tool and, if properly used, will more than pay for itself in all shops where emery wheels are used. In a word, an emery wheel should be taken as good care of in its own way as should an engine, planer or lathe."

"AS TO CORUNDUM—We are and always have been the largest users of it of any manufacturer in the world. So far, the production of Corundum in any great quantity, is confined to the Hampden Emery Co., of Chester, Mass. Traces of it have been found in many places in the United States, but so far, this company is the only one that has been fortunate enough to find it in large quantities. Their mines are among the Blue Ridge Mountains of North Carolina, many miles from the railroads, where, with the rough and mountainous roads, a few hundred pounds make a load for an ordinary team to haul.

The crude ore is freighted to Massachusetts, and there crushed and graded and sold the same as emery, except at about three times the price of the latter.

Many of our wheels are made entirely of Corundum. We use it exclusively in all our wheels for saw and tool grinding, and in fact largely for all kinds of steel work. Wheels for working cast iron are, as a rule, better when made of emery; especially for heavy, rough work, such as agricultural implements, stoves and foundry work.

[16]

Many erroneously suppose that because Corundum has sharper cutting qualities than emery, it is necessarily harder. Such is not the case, for emery is much harder to crush than corundum; consequently an emery wheel, made with the same amount of bond or cement, would have the greater durability.

In a word; the only difference between emery and corundum is, that the crystals of the latter are, in the emery chemically combined with oxide of iron, which makes them harder to crush, but less sharp in abrasive qualities.

It is our constant effort to use such material as will make the best possible wheel for the work to be done. We have a record of the compound and manufacture of all the wheels made by us since the commencement of our business, and, consequently, can either duplicate the same or change the compound of any wheel, as the experience of our customers may dictate.

We are never so well pleased as when our customers are best pleased.

IN BRIEF—When you order wheels, tell just what the work is you want them to do.

Give us the number of revolutions your wheels make per minute.

Tell us whether your preference is for a hard, medium or soft wheel.

If you are a new customer, be kind enough to tell what make of wheels has met your wants the best.

If wheels fail to suit you, inform us in what particular they fail.

If you know, give the grade or number of emery you want your wheels made of.

AS TO USE—Set your machine on a solid foundation.

Keep in good order in all respects.

Keep your wheels true.

Never run them at a higher speed than the maker recommends.

Don't try to grind wrought iron with a wheel that was made for cast iron.

Keep wheels clean from oil and grease.

If wheel is soft, don't crowd the work too hard, as it will not grind any faster, but will wear the wheel out more.

See that your machine has tight and loose collar of good size, and that both are concave and fitted with rubber gaskets between collar and wheel."





FIG. 876. HART'S EMERY WHEEL.

The Hart Emery Wheel, made by the Detroit Emery Wheel Co., is conceded to be the best emery wheel in the market.

There are more of these wheels sold—and used—than of any other make, and this, notwithstanding the prices on these wheels are somewhat higher than others.

By the use of a wire web, emery wheels are made much stronger, and, consequently, will resist much greater centrifugal strain.

We can furnish to order, Cup wheels, Cylinder wheels, and in fact special wheels of almost any size and shape, and will be pleased to correspond with those desiring any information regarding Emery and Corundum Wheels.

In connection with the foregoing, we beg to suggest that users of Emery Wheels will find the article on page 823 both interesting and profitable.

Diam.	Rev. per Min.	Thickness in Inches.														
		$\frac{1}{16}$ , $\frac{1}{8}$ , $\frac{3}{16}$ , $\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{15}{16}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	3			
1		\$0.20	\$0.25	\$0.25												
1 $\frac{1}{2}$		.25	.30	.30	\$0.35	\$0.40										
2	8000	.25	.35	.35	.40	.45	\$0.50	\$0.55	\$0.60							
2 $\frac{1}{2}$	7800	.30	.35	.40	.45	.50	.55	.65	.70							
3	7400	.30	.38	.45	.51	.57	.66	.75	.81							
4	5450	.48	.57	.66	.74	.81	.96	1.14	1.32							
5	4400	.60	.72	.84	.96	1.08	1.26	1.56	1.80							
6	3600	.70	.79	.88	1.07	1.25	1.53	1.85	2.15	\$2.50	\$2.80					
8	2750	1.06	1.18	1.30	1.55	1.80	2.25	2.85	3.20	3.80	4.15					
10	2200	1.35	1.52	1.67	1.98	2.30	2.97	3.65	3.80	4.40	4.96	\$6.14	\$7.26			
12	1850	1.58	1.70	1.80	2.25	2.70	3.33	4.05	4.28	5.10	5.62	6.96	8.30			
14	1600			2.79	3.36	3.92	4.28	5.30	6.08	7.12	7.80	9.68	10.70			
16	1400					4.95	5.48	6.76	7.76	8.80	10.00	12.32	14.60			
18	1250					6.20	6.80	8.70	9.80	11.50	12.80	15.80	18.80			
20	1100						8.00	10.00	11.60	13.60	15.20	18.80	22.40			
22	1000							11.95	14.20	16.45	17.90	23.20	27.70			
24	925								17.20	20.00	22.80	28.40	34.00			
30	735										35.00	43.60	52.40			
36	550										50.80	62.80	75.20			

*Always Say  
what wheels  
are to be used  
for.*



FIG. 877

HUNTINGTON EMERY WHEEL DRESSER.

In the past few years there have been placed upon the market Emery Wheel Dressers in almost endless variety. We have had samples of nearly every new Dresser that has been brought out, but we are inclined to believe that the old Huntington Dresser is the best.

We use in our own shops, perhaps more

Dressers and Wheels than are used in any other one shop in the world, besides selling thousands of them.

Dresser complete, with two sets of Cutters, \$2.00. Extra Cutters 30 cts. per set; postage, 3 cts.

#### GOGGLES AND GLASSES.

These are used for protecting the eye against flying particles of metal and emery. We have the ordinary Goggles, with wire gauze frame. Price, per pair, 20 cents, post-paid.

Many of our customers prefer what are known as "millers'" glasses. Price, per pair, 40 cts., post-paid.

## EMERY GRINDERS.

The line of Detroit Grinders calls for more than passing notice.

Very few people consider the amount of work that is "piled onto" an Emery Grinder. A 10 inch wheel, running at regular speed, makes 2,200 revolutions a minute; about 1,300,000 in a working day, the periphery of the wheel traveling 600 miles in the same time; and a Grinder is expected to last a good many years.

The ordinary Emery Grinder is quite a simple machine to make, as there are not many parts, and no intricate ones; this is the reason, no doubt, that so many machine shops, when casting about for something to "manufacture," pitch upon the Grinder.

Some manufacturers of Emery Grinders in stating their capacity, make claims far beyond what ordinary prudence would dictate, and it is well to examine and compare critically the dimensions of various parts of different machines.

We are not "calamity howlers," but there is a great element of danger in the improper use of Emery Wheels. We have seen in a machine shop a 14x2 inch

wheel being used, running on a Grinder, having a 1 inch Spindle, Collars 3 inches diameter, and without washers between Collar and Wheel.

We sometimes wonder why there are not ten times as many Emery Wheel accidents as there are, and feel compelled to agree with the old saying, "There's a special Providence watching over Children, Drunken Men and Fools."

The capacity of Grinders, as given in table of dimensions on this page, is amply safe.

An important advantage these Grinders have over many other makes, is the longer Spindle, and greater distance between Wheels. In the larger sizes, two men can work comfortably, without crowding. They also cover sufficient floor space to prevent the jarring, which is so common a feature on many Emery Grinders with small bases.

For Washers or Gaskets to be used between the Emery Wheels and Collars, we prefer to use Rubber Packing, as it comes more uniform in thickness than leather. Good thick cardboard will answer very well, if the others are not at hand.

TABLE OF DIMENSIONS OF DETROIT GRINDERS.

No.	0	1	3	5	6	7
Length of Mandrel, inches,	14	25	36	54	40	62
Diam. of Mandrel, "	$\frac{1}{2}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	2
Diam. of Collars, "		$\frac{3}{4}$	4	7	$\frac{3}{8}$	$\frac{1}{8}$
Floor to Center of Mandrel, inches,			35	34	34	34
Distance between wheels, "	9	17	24	40		44
Base of Machine, inches,			26x30	31x37	31x37	36x38
Diameter of Cones on Mandrel, in. }		$2\frac{1}{2}$	3	4	6	.6
		$3\frac{1}{2}$	4	$5\frac{1}{2}$		.8
			5	$6\frac{1}{2}$	8	10
Diam. of Cones on Countershaft, in. }		12	13	15	18	16
			14	$16\frac{1}{2}$		18
		13	15	$17\frac{1}{2}$	20	20
Width of Face, inches,		$2\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	5	5
Diam. of T. & L. Pulleys, inches,		5	8	8	12	12
Width of Face, T & L. Pulleys, in.		$3\frac{1}{2}$	4	5	6	6
Weight, complete, lbs.,		175	400	700	700	1,000
Takes Wheels, up to, inches,	8	12	14	20	28	24

**COMPLETENESS.**—The completeness of this catalogue does not consist in showing or describing every known style of Tool or Machine. If we undertook to do this, we should have a book so unwieldy in size as to prevent its being used constantly as a book of reference, which is a most desirable feature. On the other

hand there must be a variety, in accordance with customers' requirements, and—pocket books. And this variety we have made an effort to maintain throughout catalogue. Where it has seemed necessary to present different lines of the same kind of tools, we have in all cases shown the very best in their respective classes.

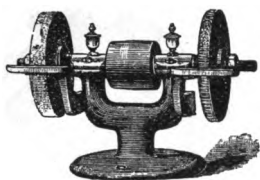


FIG. 880.  
NO. 0 DETROIT GRINDER.

Price, \$8.00. Countershaft, \$5.10

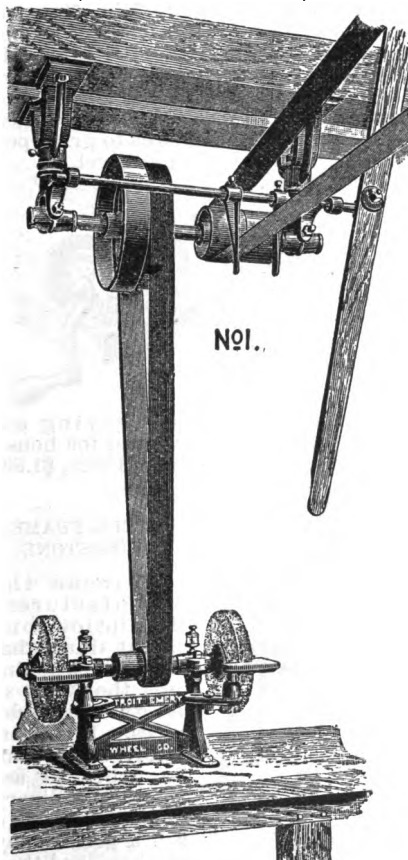
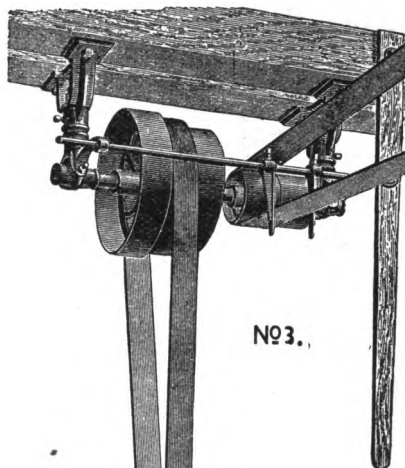


FIG. 881.

NO. 1 DETROIT GRINDER.

Price, without Countershaft, \$17.00  
" with " 25.50



NO. 3.

FIG. 882.

NO. 3 DETROIT GRINDER.

Price, without Countershaft, \$25.50  
" with " 38.25  
" without legs, \$4.00 less.

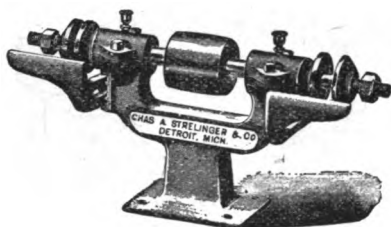


FIG. 3873. EMERY GRINDER.

Many shop owners insist upon buying the little, light Grinders with which the market is flooded—Grinders that are only suitable for wheels  $6\frac{1}{2}$  inches, or less.

We sell the Small Grinders and show a line of them in "A Book of Tools." They have their place, but it is in shops where numbers of Grinders are used, and the little ones are used for small work.

The Grinder shown here is suitable for wheels up to  $12 \times 1$  in., and is, we believe, the best machine for the money ever placed on the market; has  $\frac{1}{2}$  inch mandrel.

Price, \$8.50. Countershaft, \$3.50.

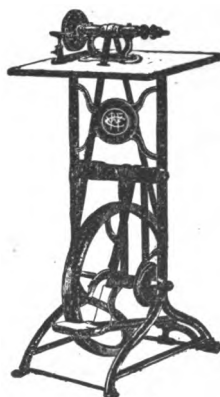


FIG. 3874.

least 2000 revolutions per minute.

In the above machine the Spindle can be speeded to 2500 revolutions. It will take any size wheel up to 7 in. diam., and  $1\frac{1}{2}$  in. thick. Wheels 6 in. diam., and from  $\frac{1}{2}$  to 1 in. thick, are the best for common use.

Price, complete without Wheels, \$15.00; weight 100 lbs.

#### FOOT POWER GRINDER.

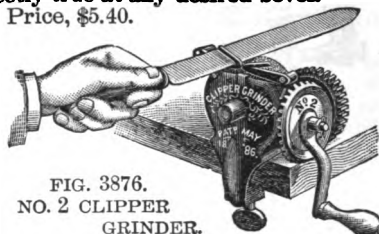
This represents the only practical Foot Power Grinder that we know of. Most Grinders of this class are arranged to run the wheel at from 300 to 500 revolutions per minute, and this is not sufficient speed to produce anything like good results, as a 6 inch wheel should make at



FIG. 3875. CLIPPER GRINDER NO. 1.

This machine is geared so that one turn of the crank revolves the wheel eight times. Wheel is 5 in. diam.,  $1\frac{1}{2}$  in. thick; is hollow in center. When used this space is filled with water. In grinding, the water is driven through its pores by centrifugal force, completely wetting the grinding surface. The clamp holds tool so as to grind perfectly true at any desired bevel.

Price, \$5.40.

FIG. 3876.  
NO. 2 CLIPPER GRINDER.

Used for sharpening Carving and other Knives, Scissors, and for household purposes generally. Price, \$1.80.



FIG. 3877.

#### STEEL FRAME GRINDSTONE.

To read the manufacturer's description, one might think that this little machine was the Acme of all grinding devices. It is certainly more comfortable to use than the ordinary grindstone. We sell a great many of them, and they are well liked, but we think an added 25 lbs. of steel in the construction would be a great improvement. Any Stone up to  $2\frac{1}{2}$  in. thick and 20 in. diam can be used.

Price, without Stone, \$3.00, with Stone mounted, complete, \$4.00

## GRINDSTONES.

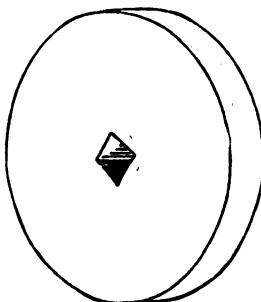


FIG. 931. GRINDSTONE.

can furnish the others to order, as well as the Columbia and Olmsted.

The following list gives sizes in thickness and diameter, which we usually carry in stock; can furnish all sizes up to 8 ft. in diameter, 12 inches thick :

Diam. Inches	Thickness in Inches.							
	1½	1¾	2	2½	3	3½	4	
24	\$0.90	\$1.05	\$1.20	\$1.50	\$1.80			
26	1.00	1.15	1.30	1.65	2.00			
28	1.30	1.45	1.85	2.25				
30		1.85	2.30	2.75	3.20	3.70		
32		2.10	2.65	3.15	3.65	4.20		
36			3.40	4.05	4.75	5.40		
42				5.50	6.45	7.40		
48				7.25	8.50	9.70		

## LATHE GRINDSTONES.

These are small grindstones with round hole, varying in thickness from 1 inch to 1½ inches.

Price, each, 6 inch, 60 cts.; 8 inch, 75 cts.; 10 inch, 85 cts.; 12 inch, \$1.00.

There are a considerable number of Imported Grindstones used, for concaving razors, grinding surgical instruments, optical lenses, etc. We do not keep any of these in stock, but can furnish some of the different brands to order.



FIG. 932. GRINDSTONE FIXTURE.

The Grindstone Fixtures usually sold in hardware stores are light, flimsy affairs. Our Grindstone Fixtures are extra heavy;

well made, and well worth the difference in price.

No. 60,	\$2.00	per set,	36 inches long.
" 62,	1.50	" 28	" "
" 64,	1.15	" 22	" "
" 66,	.85	" 16	" "

FIG. 933

## FAMILY GRINDSTONE.

Diam. of Stone.	Price.
8 inch.	\$1.15
10 "	1.40
12 "	1.65

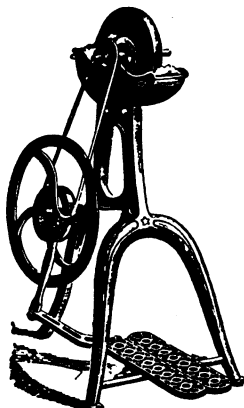
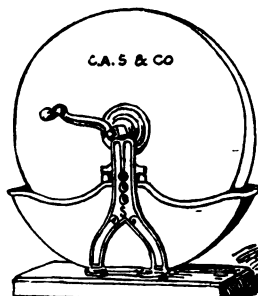


FIG. 934. FOOT POWER GRINDER.

Fig. 934 is a Foot Power Family Grindstone, which will be found very useful for household work, and by mechanics for grinding small tools.

The stone is 8 inches in diameter, 1½ inches thick, and can be run at quite a high rate of speed.

Price, \$4.00.

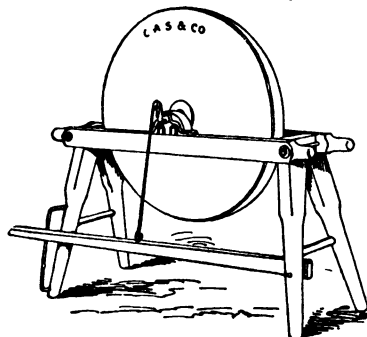


FIG. 935. MOUNTED GRINDSTONE. For prices, see next page.

The frames are made of well seasoned hardwood. Every frame is provided with Treadle, Crank and Bucket-holder.

No.	Price.	Weight of Stone.	Thickness.
3	\$2.75	40 to 50 lbs.	1½ to 2½
2	3.25	70 to 80 "	1½ to 2½
1	3 75	100 to 110 "	1½ to 2½

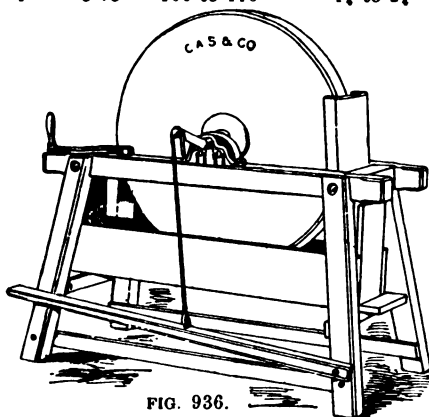


FIG. 936.

#### HERCULES MOUNTED GRINDSTONE.

The frames are made of seasoned oak, with oiled and varnished finish, strongly braced in all directions. It has an extra heavy shaft and turned rollers; is especially designed for railroad and shop purposes where a strong, heavy article is required.

No.	Price.	Size Stone.	Wgt. Stone.
5	\$6.50	28 x 3 in.	165 lbs.
7	7 50	30 x 3 "	185 "
10	8.50	34 x 3 "	240 "



FIG. 937. IRON GRINDSTONE FRAME.

The Iron Grindstone Frame, Fig. 937, is suitable in size to swing a stone 30 inches in diameter and 4½ inches thick.

No. 1, \$13.25, hand or foot power.

No. 2, (see cut) \$16.50, with pulley for power only

No. 3, \$18.00; this is the same as No. 2, with the addition of treadle for foot power.

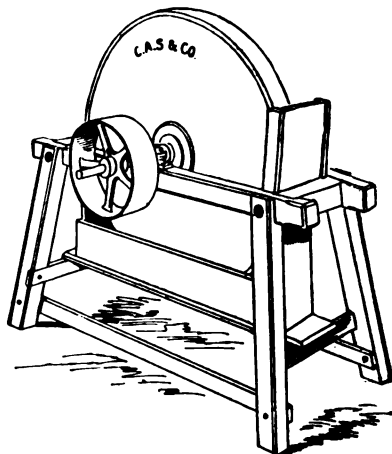


FIG. 938 POWER GRINDSTONE.

These frames are strongly made of seasoned oak, braced securely in every direction and firmly bolted together. The prices include Grindstone and everything complete, as shown in cut.

No. 7,	\$23.00;	size of stone,	36 x 4½ in.
" 8,	26.00	" " "	42 x 5 "
" 9,	33.50	" " "	48 x 6 "
" 10,	43.00	" " "	54 x 7 "
" 11,	54.00	" " "	60 x 8 "

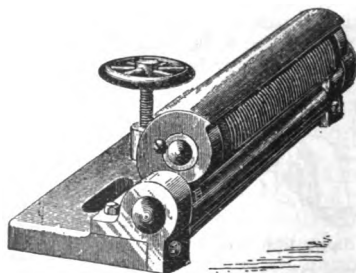


FIG. 939. GRINDSTONE TRUING DEVICE.

One of the most disagreeable things to be done in a workshop is the truing of

grindstones. It is, therefore, often the case that they are allowed to become quite out of shape and untrue, very much to the annoyance of the workman, who finds it almost impossible to grind his tools in a proper manner. The cut, Fig. 939, illustrates a device well adapted for truing and keeping the face of grindstones constantly in good shape. This can be instantly applied to the face of the stone, working automatically, and without dust, keeping the face always in good shape without interfering with its constant use.

Price, with 7 inch roll, \$13.00

" " 12 " " 17.00

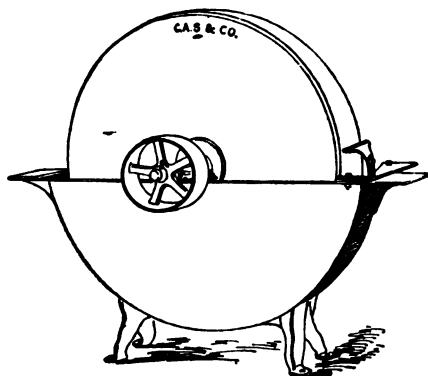


FIG. 940. POWER GRINDSTONE.

The trough is cast in one piece, making it water tight, and avoiding all joints; an adjustable tool rest, with drip pan, is furnished with each frame. The prices are for Frame and Stone complete. We furnish a 12 inch pulley with all sizes. Will substitute any required size pulley, charging only the actual difference in price. Can also furnish Frame with 12 inch loose pulley additional, for \$3.00 extra.

No. 2, \$33.00, Stone, 30x5 in., shaft, 1½ in.

" 2 36.00 " 38x6 " " 1½ "

" 2 38.00 " 40x6 " " 1½ "

" 1 42.00 " 46x5 " " 1½ "

" 1 48.00 " 48x6 " " 1½ "

" 1 58.00 " 50x8 " " 1½ "

Intermediate sizes furnished when required.

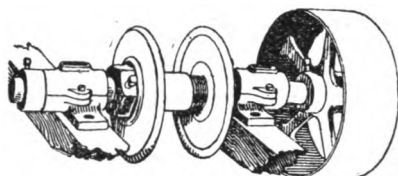


FIG. 941. PATENT GRINDSTONE FIXTURE.

The advantage of this Fixture is the ease with which it is put into the Stone and adjusted, so as to make the Stone run true. These Fixtures are well made and finished. Prices below do not include pulleys; will give prices for pulleys when desired.

No.	Price.	Diam. Shaft, in.	Lgth. Shaft, in.	Suitable for Stone.
1	\$16.00	2	30"	72 x 10 or less.
2	15.00	1½	30	60 x 8 "
3	12.00	1½	30	48 x 6 "
4	8.50	1½	28	36 x 6 "
5	7.50	1	26	30 x 4 "

WRITE YOUR NAME AND ADDRESS PLAINLY.—A good many men write their names so often that they are very apt to "slur over." We often get letters in which every word is as plain as print, but the signature is written so carelessly that it is impossible for us to read it correctly; the consequence is, that having to guess at it, goods or letters sometimes "turn up missing."

We show copies of a few names carelessly written. These are taken from letters in our possession, and we would be safe in offering a prize of fifty dollars to anyone who could correctly read all of them; but the main drawback is that we could not ourselves tell whether they were right or not.

*W. E. Mumma*

*W. E. Mumma*

*E. J. Johnson*

*Journals not Rabbitted*

## SAW SHARPENERS AND GUMMERS.

These machines have been on the market for nearly ten years, and have met with wonderful success. We will guarantee them to do everything that is claimed.

It has been proved by experience that saws regularly sharpened on these machines do more and better work, consume less power, and stay sharp longer, than those filed by hand. They not only sharpen the teeth perfectly in less than one-third of the time required by hand filing, but keep them gummed and uniform in size and shape.

The saws are kept perfectly round, the teeth all projecting the same distance from the center. There are in use in our own city in saw mills, planing mills and factories, upwards of sixty of these machines, and we have never heard a single complaint. They take the place most effectively of the expensive and complicated machines sold for the same purpose.

No files are needed where these machines are used, excepting for very fine teeth.

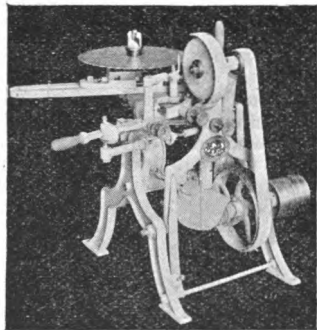


FIG. 3893.

SAW GUMMER AND SHARPENER, WITH BAND SAW ATTACHMENT.

The No. 1 machine is especially adapted for sharpening Rip and Cross-cut Circular Saws from 6 to 40 inches in diameter.

Semi-Automatic, \$50.00, including Setting Block, 3 Emery Wheels, Belt,

Tight and Loose Pulleys, Table and Guard over wheel.

Attachment for Sharpening Band Saws  $\frac{1}{2}$  to 3 in. wide, having teeth from  $\frac{1}{8}$  to  $2\frac{1}{2}$  in. apart, \$10.00.

Attachment making machine Automatic in its action on Rip Saws, \$15.00.

### NO. 2 MACHINE.

This machine is the same as the No. 1, but heavier and suitable for saws from 8 to 48 inches in diameter. Designed especially for shingle mills and small Saws about saw mills.

Semi-Automatic, \$65.00, including 3 Emery Wheels, Belt, Tight and Loose Pulleys, and Guard over wheel.

Attachment making machine Automatic in its action on Rip Saws, \$20.00.

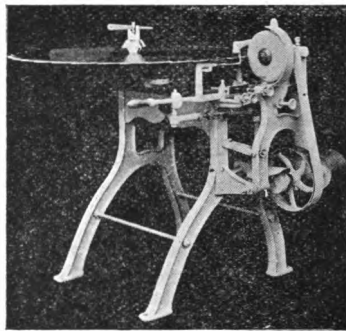


FIG. 3894. NO. 3 AUTOMATIC.

This is the largest machine we have, and is intended for saws from 8 to 72 inches in diam.

Semi-Automatic, \$75.00, including 3 Emery Wheels, Belt, Tight and Loose Pulleys, and Guard over wheel.

Attachment making machine Automatic in its action on Rip Saws, \$25.00.

### AUTOMATIC ATTACHMENT.

As will be noticed, all three of these machines can be furnished with Automatic Attachments for sharpening Rip Saws. We sell about ten machines *without* Automatic Attachment to one with, as the majority of users generally have some one to look after the machine while in operation. There are circumstances, however, under which the Automatic Attachment may be found quite a valuable feature.



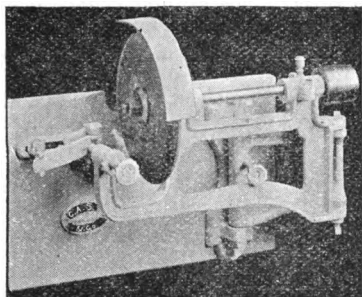


FIG. 3895. SAW GUMMER.

This is a most excellent machine, simple, and low in price. The ordinary grinder is quite unsuitable for gumming saws, as the wheel should be under the immediate control of the operator, who should be close to the wheel, and be able to move it to the saw while the latter remains stationary. The machine consists of a frame, with spindle and emery wheel, double pivoted hinge attached to bracket on table, adjustable chuck for holding saws, and guides and stops which make it unnecessary to mark off the saw before gumming.

Price, \$25.00, including Emery Wheel and Centering Holder for saws.

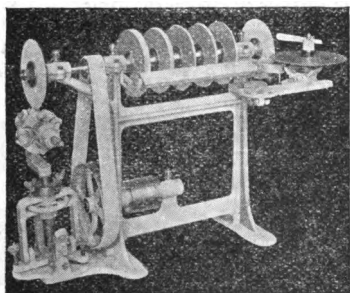


FIG. 3896. COMBINED MACHINE.

This is an excellent machine for a tool-room. It is a combined Moulding Bit, Tool, Circular Saw and Shimer Cutter Grinder.

The Head Grinding Attachment acts as a vise to hold the head while adjusting the cutter. It completes the work of sharpening, no files being used. It does the work in much less time than it

can be done by hand, and keeps the cutters in better shape; is very simple, and can be quickly changed to suit any size of head, or any angle or bevel on the knife. The Saw Gumming and Sharpening Attachment is very effective for saws up to 20 in. The Tool Grinder with its various shaped wheels is a great convenience. The price includes 5 wheels, also belt.

Tool Grinder, \$40.00; Head Grinding Attachment, \$15.00; Saw Gumming Attachment, \$10.00; Machine with all Attachments, as shown in cut, \$65.00.

Can furnish a separate machine for grinding Shimer heads only. Price, \$35.00; weight, 250 lbs.

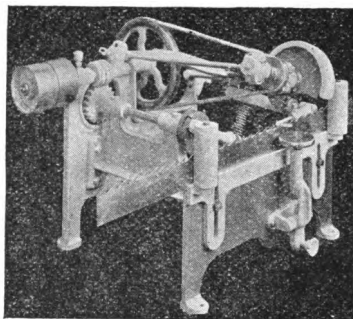


FIG. 3897. BAND SAW SHARPENER.

Simple in design and easily operated. After the teeth of a band saw have been put into good and uniform shape by the use of this machine, but little attention is needed to maintain them in perfect shape and efficiency. The sharpening is finished complete, and is better than can be done by hand. The pawl moves the saw to the left at the rate of about 35 teeth to the minute. The emery wheel moves in and out of each tooth as it passes, grinding either front, throat, or back, or all three, as may be deemed necessary. Machine is sent out complete in every particular, ready for the saw.

No. 5, for Band Re-saws 2 to 5 in. wide, complete, \$75.00.

No. 6, for band Re-Saw 3 to 8 in. wide, complete, \$85.00.

No. 7, for Band Saws from 4 to 12 in. wide, without wheels for holding saw, \$125.00.

## KNIFE GRINDERS.

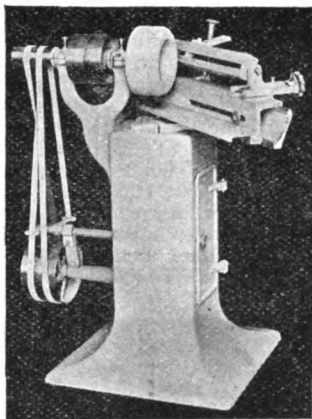


FIG. 3898.

## AUTOMATIC KNIFE GRINDER.

This machine was designed for the use of mills, factories, book binderies, and all trades where machine knives or cutters are used. It is of very simple construction, has but few wearing parts, and these are perfectly protected from dust.

A decided point of advantage in this machine over others, is the adjustment of the knife bar before the wheel in such a manner as to permit the knife bevel to be ground flat or concave.

When desired, we provide a Water Attachment operated by pump, which forces the water on the edge of the knife or wheel as preferred. We might say—in passing—that we do not consider the water attachment a necessary part when the knives ground are 44 in. long or shorter. In Fig. 3901 is shown machine with Water Attachment.

Not the least attractive feature about these machines, are the low prices at which they are furnished. We believe that there are 25 machines of this kind in use, to one of any other, and it is only on account of their being made in large numbers that they can be sold at such reasonable prices. We have numerous customers who are using this machine together with others that cost from two

to three times as much, and in every case this machine is preferred.

Price of Machine, including Emery Wheel,

For knives up to 26 in. long.....	\$75.00
“ “ “ 32 “ “ .....	85.00
“ “ “ 38 “ “ .....	95.00
“ “ “ 44 “ “ .....	105.00
“ “ “ 54 “ “ .....	125.00
“ “ “ 60 “ “ .....	135.00

Water Attachment, \$10.00 extra.

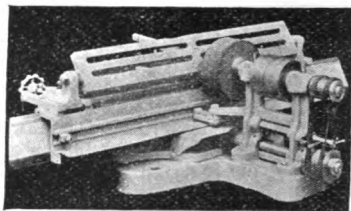


FIG. 3899. AUTOMATIC KNIFE GRINDER FOR BENCH.

This is practically the same machine as Fig. 3898; is built only in the four sizes. It is automatic in action, will grind a flat or concave bevel, and is strong and durable. The wearing parts are few and are all covered.

For knives up to 26 in. long.....	\$55.00
“ “ “ 32 “ “ .....	60.00
“ “ “ 38 “ “ .....	65.00
“ “ “ 44 “ “ .....	75.00

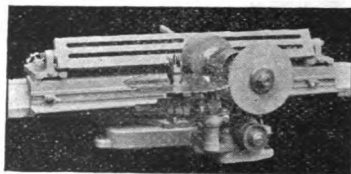


FIG. 3900. AUTOMATIC BENCH KNIFE GRINDER WITH SAW GUMMER AND SHARPENER.

This is the machine shown in Fig. 3899, fitted with an attachment to gum and sharpen small circular saws. Price for Attachment, which is to be added to the price of Grinder, \$10.00.

EXTRA WHEELS for above machines, \$4.45.

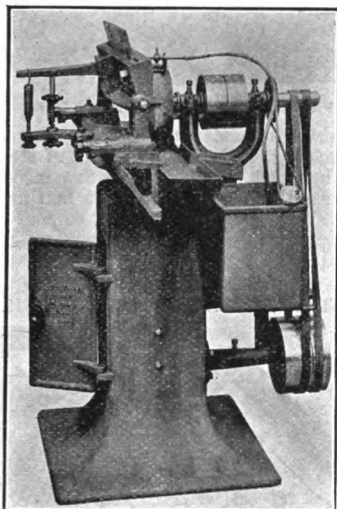


FIG. 3901. AUTOMATIC KNIFE GRINDER FOR TOBACCO KNIVES.

This is practically the same machine as Fig. 3898, but shows the Water Attachment, and is arranged to grind the 9, 11 and 13 in. high-tempered knives used in tobacco cutting.

Our main reason for showing this is to give the reader a view of the Automatic Knife Grinder in another position, and show the style of Water Attachment. Price of this machine is the same as Fig. 3898.

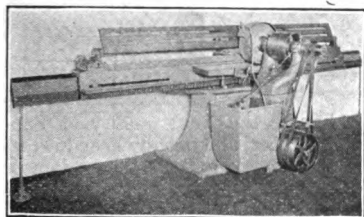


FIG. 3902. EXTRA HEAVY AUTOMATIC KNIFE GRINDER.

This is practically the same machine as the foregoing, but heavier and especially adapted for knives from 54 to 108 in. long. The 54 in. machine weighs about 1200 lbs.; the 108 in. machine,

about 2000 lbs. The prices given include Water Attachment, Emery Wheel, Belts, etc.

For knives up to 54 in. long.....	\$200.00
" " " 60 " " .....	215.00
" " " 76 " " .....	235.00
" " " 84 " " .....	260.00
" " " 90 " " .....	280.00
" " " 96 " " .....	310.00
" " " 108 " " .....	350.00



FIG. 3903.

#### KNIFE GRINDING ATTACHMENT.

This is a simple attachment to be fastened to any ordinary grindstone frame. Knife is secured between two planed jaws, hinged to a sliding carriage. Bevel is regulated by a hand-wheel. Carriage is worked backward and forward across the face of the grindstone. Price, \$14.00.

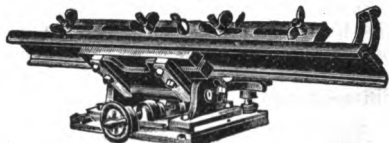


FIG. 3904.

#### NO. 2 KNIFE GRINDING ATTACHMENT.

This machine is somewhat similar to the foregoing, but more elaborate and complete, as well as heavier. It is suitable for knives of any length up to 30 in. Price, \$27.50.

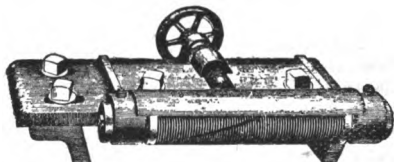


FIG. 3905. GRINDSTONE TRUER.

This is for the same purpose as the device shown on page 834. Is made in a smaller size, and is considerably less in price than the other, and we know of no reason why it is not just as good (we put the other in just because we always have).

No. 1, with 5½ in. Roll, \$8.60; No. 2, with 8½ in. Roll, \$10.50.

## GROUND EMERY.\*



FIG. 956.

We usually carry in stock all numbers of Emery from 14 to FF (fine flour).

Upon receipt of 10 cents (which is less than cost of putting up and postage) we will send to any address a wooden case, containing 6 bottles of Emery of assorted grades, such as are most commonly used, or as customer may desire.

In this connection, we give a comparative list of the numbers of Emery as used on Emery Paper and Cloth, and these same numbers are used to express the different grades of Sand Paper.

Nos. on Paper and Cloth.	No. of Emery.	Nos. on Paper and Cloth	No. of Emery.
00	Flour	1½	70
0	120	2	60
½	90	2½	54
1	80	3	46

Best Turkish Emery, small lots, 10 cts. lb.; in lots of 10 to 50 lbs., 7 cts. lb.

We will be pleased to name special prices in large quantities. Emery comes from the mill in kegs containing from 300 to 350 lbs., and in ¼ kegs, containing from 150 to 175 lbs. In shipping, we generally use Stark grain bags, for all quantities from 50 to 150 lbs., for which we charge market price, about 15 cents. The bag is useful for any other purpose.

## CORUNDUM.

We usually carry in stock all numbers of Corundum from 14 to 160. Price, in small lots, 15 cts. per lb. Will be pleased to name special prices on larger lots.

\*See article on Emery and Corundum.

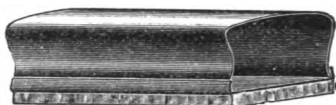


FIG. 956a. SAND PAPER BLOCK.

This is a most ingenious arrangement for holding Sandpaper. Is made of steel, and has cork bottom. Size 3x5 inches. The sand paper is placed in a half-minute. Price each, \$0.25; doz., \$2.50.

We also have the Solid Cork Blocks, 3x4x1½ in. Price, each, \$0.10.

## SAND PAPER AND EMERY CLOTH.

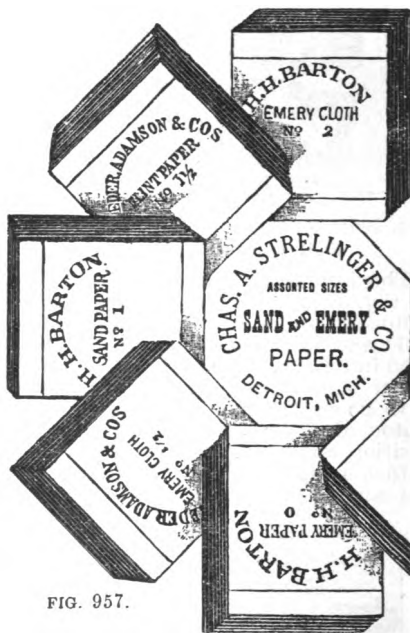


FIG. 957.

We handle the best quality of Sand and Flint Paper, and usually keep in stock the H. H. Barton and Baeder, Adamson & Co. brands.

No.	00	0	½	1
Per Ream,	\$2.70	\$2.70	\$2.70	\$2.70
Per Quire,	.17	.17	.17	.17
Per Dozen,	.10	.10	.10	.10
No	1½	2	2½	3
Per Ream,	\$2.70	\$3.00	\$3.00	\$3.00
Per Quire,	.17	.20	.20	.20
Per Dozen,	.10	.12	.12	.12

## SAND PAPER IN ROLLS.

We carry a large line of Sand Paper in 50 yard rolls, 23½, 30, 36 and 40 inches in width, but do not sell less than full rolls.

Nos.	0 to 1½	2	2½	3
23½ in	\$3 00	\$3.30	\$3 60	\$3.90
30 "	4 80	5 40	6.00	6.60
36 "	6 00	6 60	7 20	7.80
40 "	7 20	7 80	8 40	9 00

## EMERY CLOTH

Nos.	00 & 0	½ to 1½
Per Ream,	\$10 80	\$10 80
Per Quire,	.65	.65
Per Dozen,	.40	.40
Per Sheet,	.04	.04

Nos.	2	2½	3
Per Ream,	\$12 00	\$14 40	\$15 60
Per Quire,	.75	.85	.95
Per Dozen,	.45	.50	.60
Per Sheet,	.05	.05	.06

We also have the Crocus Cloth, finer than any of the above. Prices the same as Nos. 00 to 1½.

## EMERY PAPER.

Nos.	00 to 1½	2	2½	3
Per Ream,	\$3 90	\$4.50	\$5 70	\$6.90
Per Quire,	.25	.30	.35	.40
Per Dozen,	.15	.18	.20	.25

## FRENCH EMERY PAPER.

This is an extra fine quality paper, and is used extensively for all fine polishing work. An idea of the comparative fineness may be gained from the fact, that the No. 00 regular Emery paper is about equal to the French No 0

Nos.	0 and 00	000 & 0000, finest
Per 100 sheets,	\$1.75	\$2 25
Per Dozen,	.25	.30
Per Sheet,	.03	.03

## BARTON'S GARNET PAPER.

There are perhaps six or eight different concerns who make the so-called "Garnet" and "Ruby" papers. We believe the original makers of the Garnet paper were H. H. Barton & Son, and of the Ruby paper, Herman Behr & Co. The Behr Ruby Paper is considered especially desirable on shoe work.

Garnet paper is considerably higher in price than Sand, or Flint Paper, but it is claimed will do from two to three times as much work, and judging from the fact that the leading wood-working establishments in the country buy it in large quantities, and the demand is



FIG 958

constantly increasing, we are inclined to believe the claims made for it are well substantiated. In this connection, it would be well to bear in mind that the cost in time—which means money—of changing, or renewing, the paper on Sanding Machines is apt to be more than the cost of the paper itself, and that a large portion of this expense is saved in using a paper that will do twice the work.

Nos.	0 to 1½	2	2½	3
Per Ream,	\$4 40	\$4 80	\$5 20	\$5.20
Per Quire,	.30	.30	.35	.35
Per Dozen,	.18	.18	.20	.20

## GARNET POLISHING PAPER.

The Garnet Polishing, or Polishing Paper, is made of thin, fine stock paper. It can be twisted and used almost like a handkerchief; is used by furniture makers and others for fine finishing work; and also by pattern makers for getting in sharp corners. For this purpose it will do double the work in less time than Sand Paper. We usually keep this in three different grades, all fine, from No 1 to 0000. Price, per ream, \$3 50, price per quire. 25 cents.



FIG. 959. GARNET PAPER IN ROLLS.

Nos.	0 to 1½	2	2½	3
23½ in	\$4.80	\$5.20	\$5.80	\$6.60
30 "	7.20	8.00	8.80	9.60
36 "	8.80	9.60	10.40	11.20
40 "	10.40	11.20	12.00	12.80

## GROUND QUARTZ.

Under the above general title comes the material used on ordinary sand or Flint Paper. Among manufacturers it is most commonly known under the name of "Sand."

Is used largely by manufacturers of all kinds of wooden goods. The grades correspond with the numbers used on sand or flint paper; No. 0 being the finest, No. 4 the coarsest (although No. 3 sand paper is the coarsest that is commonly used and sold).

Ground Quartz, small lots, 3 cts. per lb.; in lots of 25 to 100 lbs., 2½ cts. per lb. Special prices named on large quantities. We ship this in Stark grain bags, for which we charge market price, which averages 15 cts. These bags hold from 125 to 150 lbs.



FIG. 3925. SAPPHIRE QUARTZ.

This Quartz bears about the same relation to ordinary Quartz or Flint as Corundum does to Emery. It will do two or three times as much work as the ordinary Quartz (some of our customers say five times as much).

A Sand Belt 6 in. wide and 12 ft. long takes about 4 oz. of Quartz. The cost of labor and glue is at least four times as much as the cost of the Quartz, therefore it follows that a material which will last two or three times as long as the other is much cheaper at two or three times the price. We trust that what we have written about Sapphire Quartz will induce our readers—if they use this kind of material—to give it a trial.

Sapphire Quartz, small lots, 6 cts. per lb.; in lots of 25 to 100 lbs., 5 cts. per lb. Special prices will be named on large quantities. Like the regular Ground

Quartz, this is shipped in Stark grain bags, for which we charge 15 cts. Bag holds from 125 to 150 lbs.

## SAMPLES OF QUARTZ.

We will send 6 Sample Bottles Assorted Quartz by mail, on receipt of 10 cts. for packing and postage.



FIG. 3926.

## ENDLESS POLISHING BELTS.

This is altogether the most desirable form of Belt for Sand or Emery. The Belts are made especially for this purpose, being composed of two thicknesses of heavy duck, with a layer of vulcanized rubber between. We carry in stock Belts of the following lengths: 10 ft. 6 in., 12 ft., 14 ft. and 16 ft., and can furnish to order Belts of any length

Width.	Per Ft.	Width.	Per Ft.
1 in.	\$0.10	4 in.	\$0.36
1½	.15	5	.45
2	.19	6	.54
2½	.25	8	.72
3	.27	10	.90
3½	.32	12	1.08

## WOVEN COTTON SAND BELTS.

This is a Single Ply Canvas Belt made especially for this purpose. The ordinary cotton belt is too heavy and Clumsy. Good, heavy canvas answers the purpose very well, but as the edge must be left raw, it is apt to ravel, while these belts are made with seldedge on both sides. The ends are usually joined by sewing; sometimes by gluing. We are inclined to the belief that the Endless Polishing Belts are the best and cheapest in the long run, but some of our customers don't agree with us.

Width.	Per Ft.	Width.	Per Ft.
1½ in.	\$0.04	2 in.	\$0.05
2½	.06	4	.09
3	.07	5	.10
3½	.08	6	.12

## GLUE.

On page 803 we describe and price an Emery Glue that is especially desirable for Sand Belts and Wheels. It is very essential to have the proper Glue for this class of work.



FIG. 3927. MYSTIC GLUE.

This is a Liquid Glue, made especially for Sand Belts, Sand and Emery Wheels, Buffers, etc. It is used cold; is not recommended for wood work. Will be found a most excellent article; convenient and economical.

1 gal. Cans.....	each,	\$2.00
5 " " .....	"	8.00
10 " " .....	"	15.00

## BELT STRAPPING MACHINES.

These machines are used for finishing both round and irregular forms of wood work, such as Handles, Pins, Spokes, Neck Yokes, etc., etc. Steel and Iron work can also be finished by using Emery instead of Quartz or Sand.

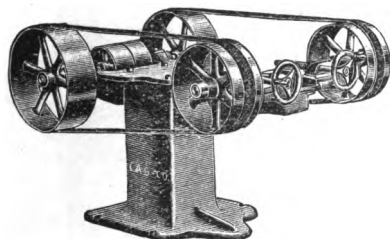


FIG. 3928.

## DOUBLE SAND BELT MACHINE.

This is a compact, convenient and durable machine. Each belt is strained independently. Length of belt with regular pulleys is 11 ft. Belt Pulleys are 20 and 14 in. diam., 6 in face.

Price, \$110.00. Weight about 700 lbs. Same Machine, for one belt only, \$85.00.

## VERTICAL SAND BELT MACHINE.

We can furnish a machine similar to the foregoing, excepting that the Belts are nearly vertical and parts are secured to a hard wood frame.

Price, complete, \$98.00.

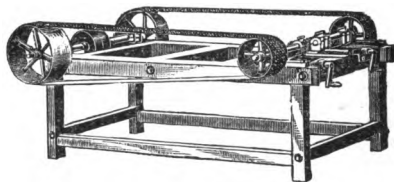


FIG. 3929.

## NO. 2 DOUBLE SAND BELT MACHINE.

The frame of this machine is made of hard wood, is strong and substantial. The Idler Pulleys (10x8) are independent of each other, and have Lateral Adjustments to provide for tension of belts. Price, \$75.00; weight, 700 lbs.

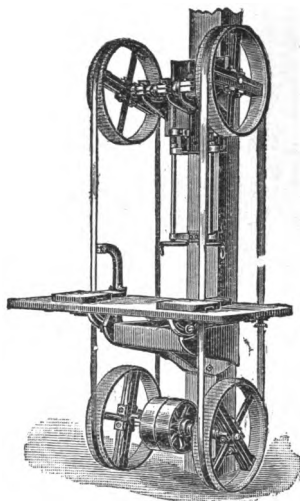


FIG. 3930.

## PATENT IRREGULAR BELT SANDER.

This machine is used principally in Chair, Carriage and Furniture work. Table is of kiln-dried cherry, and can be tilted for beveled work. For polishing irregular sawed edges of almost any shape, it is especially valuable.

Price, \$183.00; weight 1000 lbs.

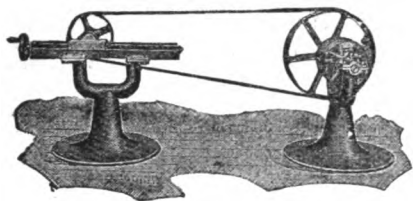


FIG. 3931.  
PEDESTAL SAND BELT MACHINE.

This is a very good machine, at a moderate price. Being independently mounted, a belt of any length may be used. The machine provides for taking up the belt 2 ft. Driving Pulley is 22x6 in. Idler Pulley 14x6 in. Price, \$67.00.

Can furnish a Double Belt Machine of same design, but of double capacity, for \$88.00.

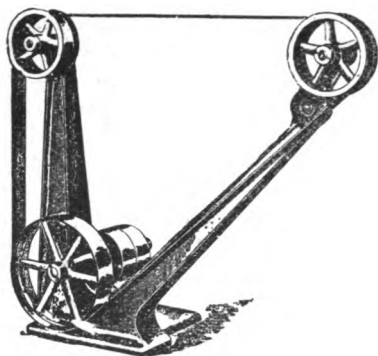


FIG. 3932.  
NO. 0 STRAPPING MACHINE.

This machine, although designed more especially for metal work, can be used to good advantage on all Strapping work. Is intended to use a belt 12 ft. long. Distance between centers of flange pulleys 36 in.; diam. of flange pulleys 8 in.; driving pulley 14 in.

Price of machine for 2½ inch belt, \$52.50.

Price of machine for 4 in. belt, \$65.00.

**SOMETHING ELSE**—It is possible that none of these machines fit your case; if not, we may be able to help you out. Only tell us just what you want to do.

## SANDING MACHINES.

The line of machines shown and described here is very complete, and will cover amply the needs of those who require machines of this class. All of the machines shown are of excellent quality.

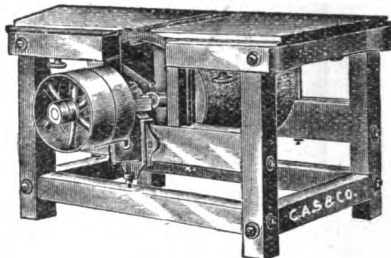


FIG. 3933. HAND FEED SANDER.

This machine is adapted for polishing all kinds of wood work. The frame is made of thoroughly seasoned lumber, tables are of iron, of good length, and are planed true on both sides; each one being adjustable, they can be brought close together or removed to give free access to sand drum.

The Drum is provided with Vertical Adjustment on both ends.

Price, \$75.00; weight, 750 lbs.

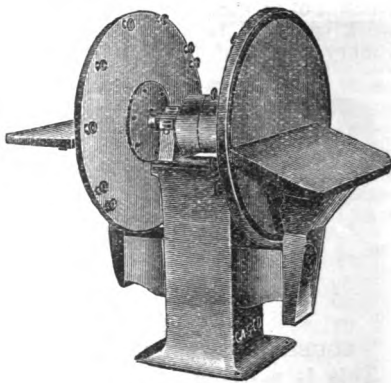


FIG. 3934.  
DOUBLE SAND DISC MACHINE.

This is a heavy, rigid machine. The Discs are glued-up in three thickness of kiln-dried wood, with the grain crossed. Discs are 30 or 36 inches in diam. The



Tables are of glued-up cherry, but may be of iron if so ordered. One is stationary, the other is usually made to adjust to an angle. Both may be adjusted vertically. This machine may be belted through the frame if necessary.

The Clamp Rings lie in the "Rabbit" turned in the face of the disc, and draw the sand paper down over a rounded shoulder, without ridges or laps on the flat surface, no wrenches being required for this operation. Plain Discs without Slide Clamping Rings can be furnished if preferred, at lower price.

No. 1, with 1 Disc and 1 Tilting Table, \$76.50.

No. 2, 2 Discs (as shown in cut) \$110.50. Weight, 950 lbs.

#### DISC AND DRUM SANDER.

We can furnish a Combination Sander with Tapering Drum on end of arbor opposite disc. This has 1 Disc and Tilting Table, and is made on the same frame as the above, with 30 in. Disc, and 13 in. Drum.

Price, \$90.00; weight, 650 lbs.

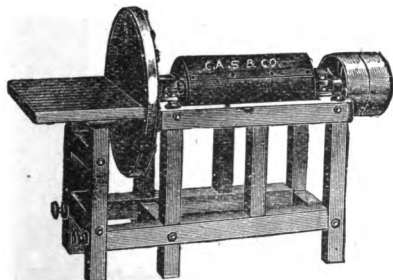


FIG. 3935. NO. 1 COMBINED DISC AND DRUM SANDER.

The frame of this machine is of hard wood, well finished. The Drum and Disc are made of any diameter to suit purchaser; the Disc usually from 24 to 30 in., the Drum 12 in. diam. and 24 in. long. Disc is of iron, with a handy and effective Clamping device, for fastening paper.

The Table comes very close to the disc, affording a steady support for short work, and can be readily removed when changing paper by loosening the hand-wheels shown at the bottom.

Price, \$90.00: weight, 600 lbs.

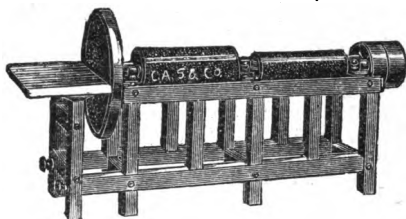


FIG. 3936. NO. 2 COMBINED DISC AND DRUM SANDER.

This machine is the same style as No. 1, with the addition of an extra Drum. Is desirable where Drums of different diameters are wanted, or of like diameters with different grades of sand paper. Drums are made of any diameter, the ones on this machine being 8 and 12 inches in. diam. and 24 in. long.

Price, \$110.00; weight, 800 lbs.

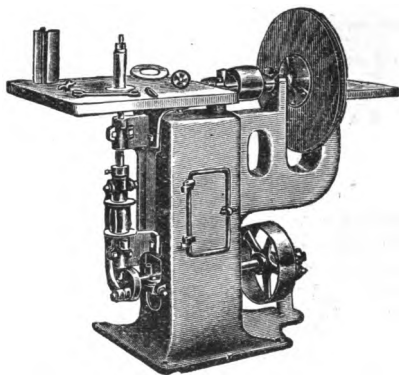


FIG. 3937. UNIVERSAL SANDER.

This machine is used in Cabinet, Furniture, Organ, and Job shops for smoothing the edges of Scrolls, Brackets, and irregular pieces of all kinds, whether wholly curved or partially straight. A perfectly smooth surface is produced; the machine will easily do the work of four or five men, and save 75 per cent of the sand paper, besides leaving a better and truer surface.

The Spindle has a reciprocating motion (to wear the paper evenly). Disc is provided with a ring for clamping sand paper, and is usually made 21 in. in diam. Disc table can be tilted to an angle. On this machine two persons can work at the same time. Rolls up to

4 in. diam. can be used. One Roll each, 1½ and 3 in. diam. x 7 in. long are sent with machine, and one Roll with No. 1 Machine.

No. 2 Machine, with 1 Disc and 1 Roll Spindle and 2 Rolls (see cut), Wood Table, \$106.25; weight 750 lbs. No. 2, Iron Table, \$113.50; weight 900 lbs.

The No. 1 Machine is the same style, but has Single Upright Spindle, and no Disc. Price includes 1 Roll.

No. 1, Wood table, \$76.50; weight 600 lbs. No. 1, Iron Table, \$81.00; weight 600 lbs.

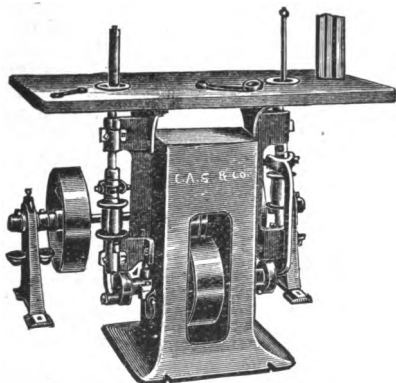


FIG. 3938.

#### DOUBLE VERTICAL SPINDLE SANDER.

This machine in general construction is similar to the foregoing, and is, we believe, the finest machine of its class in the market. Price includes 2 Rolls, usually 1½ and 3 in. diam., 7½ in. long, taking ordinary sheets and paper, and Countershaft complete.

No. 1, Wood Table, \$115.50; weight 750 lbs. No. 2, Iron Table, \$123.00; weight 900 lbs.

NOTE—In connection with Carving Machines, we show a small Sanding Lathe that is suitable for many purposes. A very good machine and reasonable in price.

#### DOUBLE DISC BLIND SANDER.

Fig. 3939 is a heavy machine, designed especially for Sand Papering one or both sides of Door Panels, Blinds, Out and Inside Shutters, Mantels, Drawer Fronts, etc., at a single operation. Has two Vertical Discs running opposite to

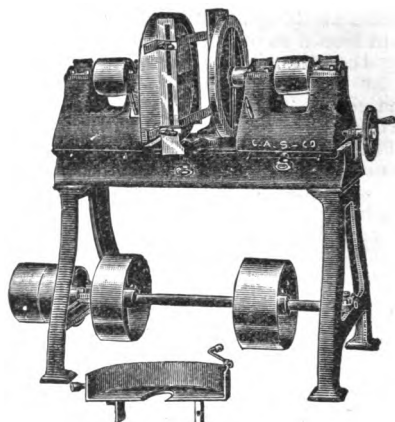


FIG. 3939

#### DOUBLE DISC BLIND SANDER.

each other, both of which have a lateral motion governed by springs. Will work 21 in. wide. It is claimed it will sand paper 500 Door Panels or 200 pairs of Blinds in ten hours.

Price, \$130.00; weight, 900 lbs.

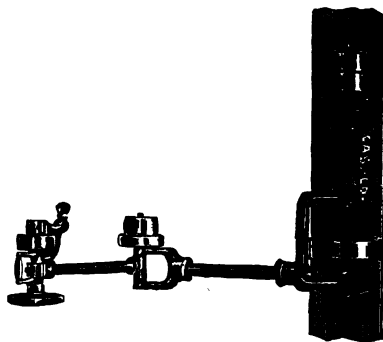


FIG. 3940

#### ELBOW SAND PAPERING MACHINE.

This machine is especially adapted for Sand Papering Doors, Sash, Blinds and Cabinet work after the work is put together. Machine takes 1 belt 8 ft. 10 in. long, and 1 belt 6 ft. 11 in. long.

Price, \$36.00; weight 150 lbs.

Can furnish this machine fitted as a Pin Boring Machine (see Elbow Boring Machine). Price, Combined, \$45.00.

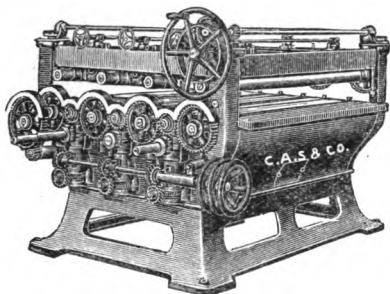


FIG. 3941.

**TRIPLE DRUM SANDER AND POLISHER.**

This is a very fine machine, and capable of performing a great quantity of work. As will be noticed in table of weights, these machines are very heavy and substantial. All cylinders are adjustable by means of worm wheel and vertical screws, operated by cut spiral gears and 3 hand wheels. Both ends of the cylinder move accurately together. The Oscillating movement is very simple and accurate, and therefore durable. The cylinders are solid castings, carefully proportioned, turned, and balanced and ground true, running at regular speed on their own journals. The Paper Fastener is a valuable feature. Changing the paper occupies but very little time.

Width.	Price.	Weight.
24 in.	\$600.00	4800 lbs.
30 "	675.00	5300 "
36 "	750.00	5800 "
42 "	850.00	6400 "
48 "	1000.00	7300 "

**NO NAME FOLKS**—Every few days (and sometimes oftener) we receive a letter from some one who forgets to sign his name. If it is an order from him with money enclosed, we are pretty sure to hear from him, wanting to know where the goods are—and sometimes the letters are not overly civil; if it is a letter of inquiry and our correspondent gets no answer, he thinks we are inattentive or careless, and as a result we are apt to lose what might be a good customer.

**ROPE HOISTS.**

These Hoists will be found very useful for medium and light work. They can be used to advantage in Factories of all kinds, and by Contractors, Carpenters, and Masons. Can be used in any position, or at any angle. They elevate, lower, lock, and unlock with one rope only, load being held at any point without fastening the rope.

Nos. 25 and 31 have 3 Sheaves, top and bottom; Nos. 27, 33 and 37 have 2 Sheaves, top and bottom; Nos. 29 and 35 have 1 Sheave, top and bottom. Hoists with 3 Sheaves take three times as much rope, but one man can hoist twice the load, as compared to the 1 Sheave Hoist. On the other hand, the 1 Sheave Hoists work three times as fast, and are more desirable where the loads are light.

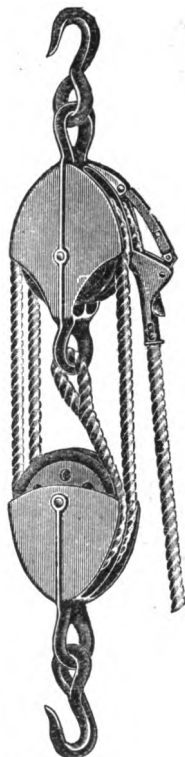


FIG. 3942.

**SELF-ACTING ROPE HOIST.**

No.	Price.	Size Rope.	Capacity Lbs.	One Man Can Lift.
25	\$8.00	$\frac{3}{4}$ or $\frac{1}{2}$	3000	700
27	6.70	$\frac{1}{2}$ or $\frac{3}{4}$	1800	500
29	5.35	$\frac{1}{2}$ or $\frac{3}{4}$	1400	400
31	5.35	$\frac{1}{2}$ or $\frac{3}{4}$	2800	700
33	4.00	$\frac{1}{2}$ or $\frac{3}{4}$	1500	500
35	3.50	$\frac{1}{2}$ or $\frac{3}{4}$	1200	350
37	2.80	$\frac{1}{2}$	800	400

Prices do not include Rope. Nos. 31 and 33 are the most commonly used sizes.

In our Catalogue, "A Book of Tools" (see page 744 of this catalogue), will be found a complete line of Chain Hoists up to 10 tons capacity.

## MACHINE BITS.

Before going into the subject of Boring Machines, we beg leave to insert here two styles of Machine Bits that were unintentionally omitted in that part of catalogue where they should have been placed (with other Machine Bits, page 700).



FIG. 3944.

RUSSELL JENNINGS' MACHINE BIT.

We carry the Genuine Russell Jennings' Machine Bits in stock, with 4 and 6 in. twist, in the sizes given in table. Shanks are machine turned,  $\frac{1}{4}$  in. diam. and 2 in. long.

Size.	Each.	Dozen.	Size.	Each.	Dozen.
$\frac{1}{4}$	\$0.34	\$3.60	$\frac{1}{2}$	\$0.63	\$6.72
$\frac{3}{8}$	.38	4.08	$\frac{3}{4}$	.69	7.32
$\frac{1}{2}$	.38	4.08	$\frac{1}{2}$	.74	7.92
$\frac{3}{4}$	.43	4.56	$\frac{3}{4}$	.81	8.64
$\frac{1}{2}$	.43	4.56	$\frac{1}{2}$	.88	9.36
$\frac{1}{2}$	.50	5.28	$\frac{1}{2}$	.95	10.08
$\frac{1}{2}$	.50	5.28	1	1.00	10.80
$\frac{1}{2}$	.54	5.76	1 $\frac{1}{2}$	1.15	12.24
$\frac{1}{2}$	.54	5.76	1 $\frac{1}{2}$	1.28	13.68
$\frac{1}{2}$	.59	6.24	1 $\frac{1}{2}$	1.42	15.12
$\frac{1}{2}$	.59	6.24	1 $\frac{1}{2}$	1.55	16.56

Other sizes to order.



FIG. 3945. COUNTERSINK BIT WITH ROUND SHANK.

Similar in style to the one shown in Fig. 3381, but has a  $\frac{1}{4}$  Parallel Round Shank, so that it can be used in any adjustable drill chuck. These Bits will be found a great convenience to thousands of manufacturers who have been compelled to fit the square shank style of Bits to their chucks.

- No. 10,  $\frac{5}{8}$  diam., bores  $\frac{1}{2}$  in. deep.
- No. 11,  $\frac{3}{4}$  diam., bores 1 in. deep.
- No. 12,  $\frac{1}{2}$  diam., bores 1 $\frac{1}{2}$  in. deep.
- No. 13,  $\frac{1}{2}$  diam., bores 1 $\frac{1}{2}$  in. deep.
- No. 14,  $\frac{3}{4}$  diam., bores 1 $\frac{1}{2}$  in. deep.

All sizes 13 cts. each; \$1.35 per doz.

## DRILL CHUCKS.

It would seem almost unnecessary for us to expatiate upon the advantages of Drill Chucks, but there are thousands of Boring Machines in use that are not provided with them, and that ought to be. On page 701 will be found an article on this subject.

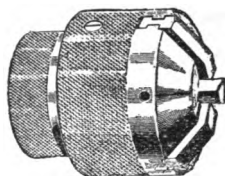


FIG. 3946. ACME CHUCK.

We believe it is the best low-priced Drill Chuck in the market. The Bits are tightened by hand, requiring no Spanner wrench. Has a capacity of 0 to  $\frac{1}{2}$  in. Price, \$3.20.

The "1883" Drill Chuck is similar in style, but larger and heavier. Holds drills from  $\frac{1}{4}$  to  $\frac{1}{2}$  in. Price, \$4.50.

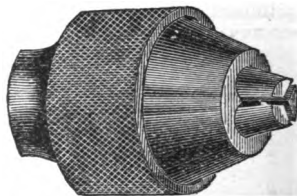


FIG. 3947. ALMOND CHUCK.

This is a very popular, high-grade Chuck; is especially useful on Multiple Spindle Boring Machines, and on machines with light Spindles used for boring large numbers of small holes.

No. 1 is the most generally used size.

No. 0, \$4.40; holds Drills from 0 to  $\frac{1}{8}$  in.

No. 1, \$4.40; holds Drills from 0 to  $\frac{3}{8}$  in.

No. 2, \$7.20; holds Drills from 0 to  $\frac{1}{2}$  in.

NOTE.—Any of these Chucks will be furnished with Shank  $\frac{1}{4}$  in. diam., at an extra cost of \$0.65.

In our *Metal Workers' catalogue* (see page 744 of this catalogue) will be found a very complete line of Drill and Lathe Chucks, comprising over thirty styles and two hundred sizes.

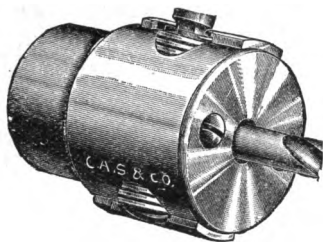


FIG. 3948. FLOWER CHUCK.

This Chuck is of the type that is recognized as being the strongest and most durable, and for general shop use it is doubtless the best of any, as it holds Bits of all kinds firmly, and will stand more hard usage than any other style. We believe this to be as good as any Chuck of this class. Prices are quite reasonable.

No.	Each.	Capacity.	Diam.
100	\$4.80	0 to $\frac{1}{4}$	$2\frac{1}{2}$
101	5.60	0 to $\frac{1}{2}$	$2\frac{1}{2}$
102	6.40	0 to 1	$3\frac{1}{4}$

## BORING MACHINES.

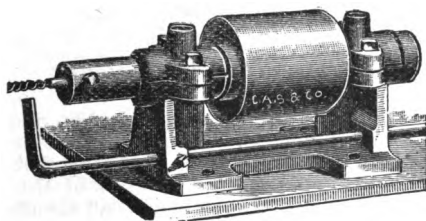


FIG. 3949. BORING SHAFT.

Boring Shafts or Mandrels are well adapted to many kinds of work. They are arranged to take in bits with shank  $\frac{1}{2}$  in. diam., and have an Adjustable Stop for regulating depth of hole.

No. 1, \$7.50; Pulley  $3\frac{1}{2}$  diam., 4 in. face.

No. 2, \$9.00, somewhat heavier and larger than No. 1; Pulley 4 in. diam.,  $5\frac{1}{2}$  in. face.

No. 3, \$11.00; same as No. 2, but with Tight and Loose Pulleys.

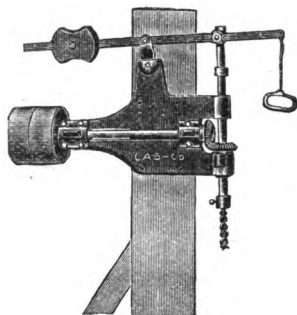


FIG. 3950.

## NO. 1 POST BORING MACHINE.

Has a strong iron frame; is fastened to a post by means of bolts. Can be placed in the most convenient position for the operator. Price, \$18.00.

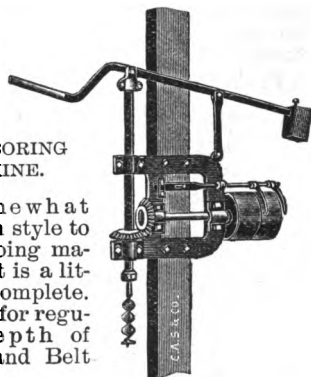


FIG. 3951.

## NO. 2

## POST BORING MACHINE.

Is somewhat similar in style to the foregoing machine, but is a little more complete. Has Stop for regulating depth of holes, and Belt Shifter.

Price, \$20.00.

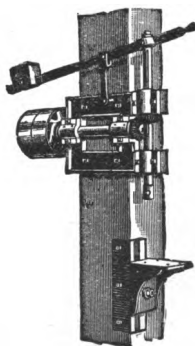


FIG. 3052.

NO. 3  
POST BORING MACHINE.

This, like the other, is intended to be bolted to an upright post. The table is adjustable in planed groove.

Price, \$30.00.

Read Article "Variety" See Index.

#### NO. 4 POST BORING MACHINE.

This is, altogether, the best machine of this class we know of; is operated by foot power, leaving the hands free for the work. Will bore up to 5 in. deep, and measures 9 in. from post to drill spindle. Table Bracket has a screw adjustment of 12 inches. Table measures 14x28 in. Post is furnished with machine, is made from glued-up stock, and is usually 8 in. square and 12 ft. long.

Price, \$61.00; wgt., complete, 500 lbs

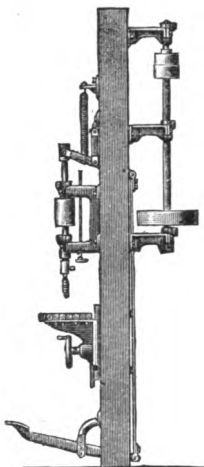


FIG. 3953.

Drills; is a strong, well made machine. Movement of spindle 5 inches. Table Bracket has a screw adjustment of 12 in. Price, \$80.00; weight, 800 lbs.

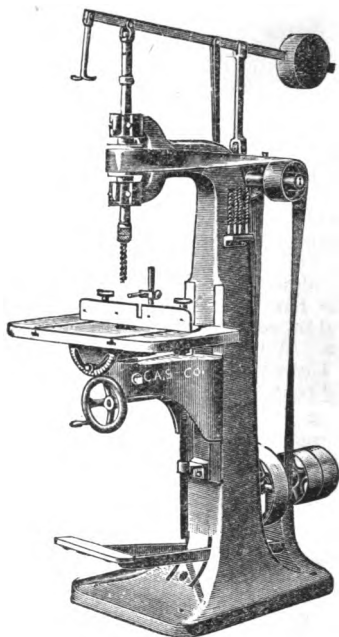


FIG. 3955.

#### UNIVERSAL VERTICAL BORING MACHINE.

This machine is of new design, and is, we believe, the best Upright Boring Machine ever placed upon the market. It is the only machine we know of that has a *Universal Table*, which can always be placed in a position to get the light direct on the work, or bore at any angle required, up to 60 degrees and 11 in. deep. Machine has fast and slow speeds for light or heavy boring. The Spindle is provided with a Special Patent Chuck for holding Bits, which requires but a slight grip of the hand to tighten or loosen the bit. Machine can be operated by either hand or foot power. Depth of holes regulated by Stop Gauge. The Angle Fence can be set diagonally across the table, securing two different angles, bored at one operation of the spindle. Fig. 3956 is a sectional view of the table set at an angle of 30 degrees.

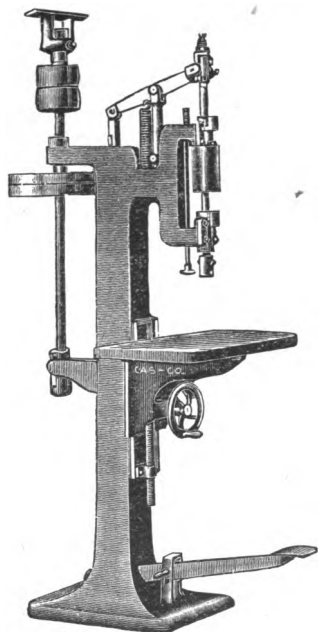


FIG. 3954. VERTICAL BORING MACHINE.

This machine is somewhat similar in design to the modern Machinist Upright

The quadrant is accurately graduated with the number of degrees plainly marked.

Price includes 5 Bits; one each,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $1$ ,  $1\frac{1}{2}$  and  $2$  Machine Bits. Price, \$94.50.

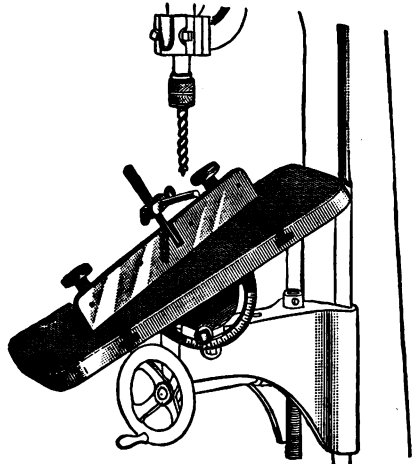


FIG. 3956.  
SHOWING TABLE SET AT ANGLE.

#### THREE-BIT ATTACHMENT.

This cut shows an Attachment suitable for the Universal Vertical Boring Machine. This Attachment is made to carry 3 Bits; will bore holes from  $\frac{1}{4}$  to 2 in. diam.,  $2\frac{1}{2}$  to 8 in. apart and 11 in. deep.

Price of Attachment, \$40.00.

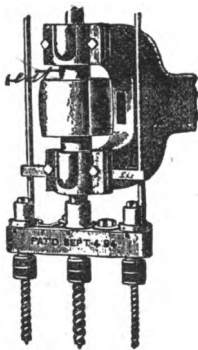


FIG. 3957.

#### OTHER MACHINES.

We are constrained to believe that the line of Boring Machines shown here is somewhat more complete than has ever before been shown in any one catalogue. There are other styles of Special Machines that we can furnish.

#### DOUBLE VERTICAL BORER.

Intended especially for Chair Seat work, Legs, Arms, etc., but can be used for many special purposes. The Boring Spindles are adjustable apart on radius arms from 5 to 30 in. horizontally, and can be set to a considerable angle from the vertical. Spindles can be set at an angle; Table is adjustable vertically 51 in., also tilts to an angle to and from the column.

Price, complete with Chucks, \$243.00; weight, 1000 lbs.

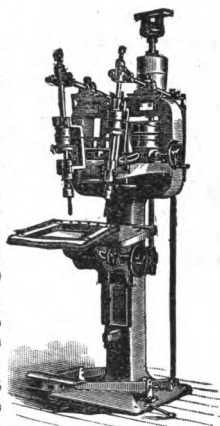


FIG. 3958.

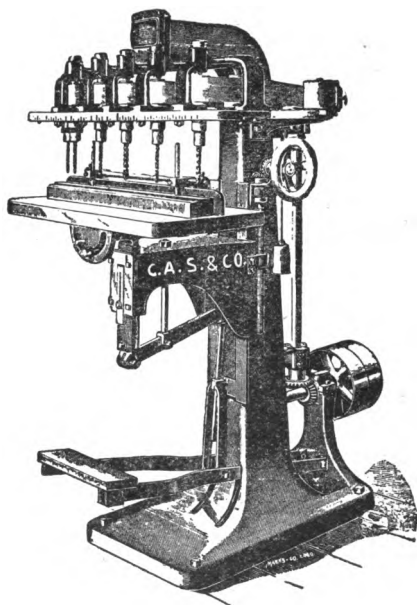


FIG. 3959.  
MULTIPLE BORING MACHINE.

This machine has just been brought out; is particularly well adapted to Planing Mills, Carriage, Chair and Furni

ture Factories, Agricultural Works, etc. From one to eight holes (according to number of spindles) can be bored from  $2\frac{1}{4}$  to 30 in. apart at one movement of the foot lever. Each spindle is adjusted separately; depth of holes regulated by Automatic Stop. Table can be set to any required angle for boring Chair Seats or other angle work. Distance between table and end of spindle, 16 in.; from column to center of spindle, 16 in., and will bore 6 in. The cut shows a Six-Spindle Machine, the sixth bit being driven with a pair of fine steel gears for close boring. Price includes one set (4) Bits.

Four-Spindle Machine, \$165.00. Add for each additional Spindle \$12.00. Weight about 900 lbs.

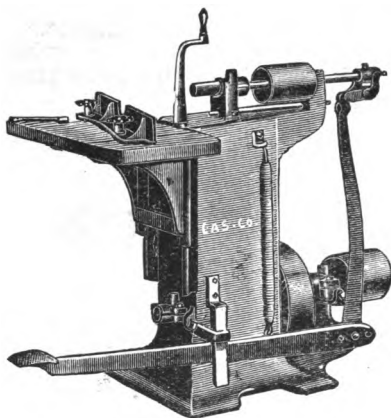


FIG. 3960.

#### NO. 1 HORIZONTAL BORING MACHINE.

Is suitable for holes  $4\frac{1}{2}$  in. deep or less. Table is of hard wood glued-up,  $14 \times 28$  in. Vertical Adjustment is by a screw and hand crank, with a range of 10 in. Hand Crank is removable. Machine is designed for doing quickly, medium and light work.

Price, \$73.00; weight, 600 lbs.

#### NO. 0 HORIZONTAL BORING MACHINE.

Is made on the same frame as the foregoing, but with Stationary Spindle, and without Foot Lever Attachment. Table has the same Vertical Adjustment, and also slides to and from the bit 5 in.

Price, \$61.00; weight, 550 lbs.

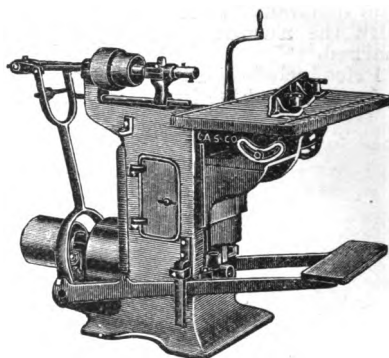


FIG. 3961.

#### NO. 2 HORIZONTAL BORING MACHINE.

Is somewhat similar in style to the No. 1, but heavier and more elaborate. The table is of iron  $18 \times 32$  in., and has slots for the fence at right angles, so that long work can be bored endwise as well as across at any required angle. Table tilts to 45 degrees both ways, and the fence is adjustable in all directions to the same angle or less. The depth to which the arbor bores is 9 in. Table Bracket has a vertical adjustment of 10 in. Price, \$121.50; weight, 750 lbs.

#### DOUBLE HORIZONTAL BORING MACHINE.

Is Designed for Doweling Chair, Cabinet, Carriage, Car and similar work.

The Spindles are mounted in an adjustable head, which swivels around one of them. The range of adjustment is from a horizontal to a perpendicular line, and slightly beyond. Table has a vertical movement of 9 in., and a forward and backward movement of 6 in. Distance between centers is from 1 to 10 in. on the No. 1 Machine, and from 1 to 16 in. on the No. 2 Machine.

No. 1 Machine, \$148.75; weight, 750 lbs. No. 2 Machine, \$166.75; weight, 800 lbs.

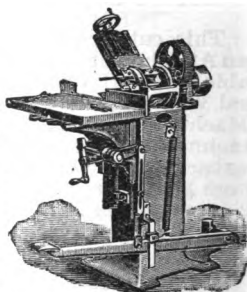


FIG. 3962.



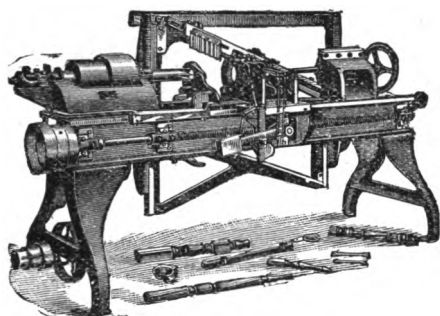


FIG. 3977.

### PATENT AUTOMATIC BACK KNIFE LATHE.

These Lathes are of the latest and most approved design. The workmanship is of the very best quality, and we can thoroughly recommend them to those who are in need of a machine of this class. Three sizes are manufactured, each size being furnished in two different lengths. They are all first-class Gauge Lathes, as well as Back Knife Lathes (in Fig. 3978 it is shown as an Automatic Gauge Lathe), and can be used on a great variety of work without the Knife Gate. The Smoothing or Gauge Chisel finishing the plain swells or tapers nicely.

The Patent Intermediate Knife Bed, to which the Pattern Knives are attached, is used exclusively in these lathes, and saves a great deal of time in "setting up" for a change of work, and also avoids shifting knives for sharpening and re-adjusting afterwards. This device also often saves a large item of expense for pattern knives, in connection with the Gauge or Smoothing Chisel, working on a separate form.

The Turning Chisels all have our Patent Adjustable Screw Tool-Stocks, by which they may be adjusted in the cut while the lathe is in motion.

No. 1 Lathe, for stock from 3 to 30 in. long, \$297.00; for stock from 3 to 36 in. long, \$323.00, turns from  $\frac{1}{4}$  to  $2\frac{1}{4}$  in. diam., leaves squares  $1\frac{1}{2} \times 1\frac{1}{2}$  at any point. This size will take all ordinary Chair Work, Furniture Spindles, Brush Handles, etc. From 1200 to 3000 pieces per day can be turned.

No. 2 Lathe, for stock from 4 to 40 in. long, \$365.00; for stock from 4 to 50 in. long, \$395.00, turns from  $\frac{1}{4}$  to 3 inches

in diam., leaves squares  $2\frac{1}{2} \times 2\frac{1}{2}$  in. at any point. This size is for all kinds of Chair Work, Stand Legs, Small Table Legs, Balusters, Handles, Spindles, etc. It is a favorite size for general work. From 1000 to 2500 pieces per day can be turned.

No. 3 Lathe, for stock from 6 to 40 in. long, \$455.00; for stock from 6 to 50 in. long, \$486.00; turns from  $\frac{1}{4}$  to 5 in. diam., leaves squares  $4 \times 4$  at any point. From 600 to 1500 pieces per day can be turned.

With each machine is furnished one set (3 or 4) Turning Chisels, 3 Dies or Steady Collars, 2 Spur Centers, 3 Knife Beds, 4 Balancing Sheaves, and Countershaft complete.

Weights: No. 1 Lathe, 1750, 1900 lbs.; No. 2 Lathe, 2300, 2600 lbs.; No. 3 Lathe, 3200, 3600 lbs.

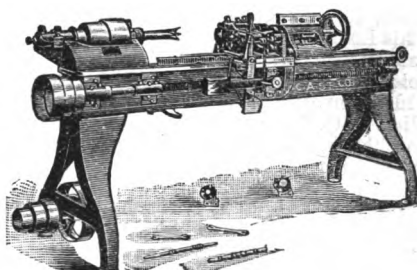


FIG. 3978.

### PATENT AUTOMATIC GAUGE LATHE.

These lathes are the same as the Back Knife Lathes, excepting that the Knife Frame and Gate, or its attachments, are omitted. If wanted later on, these attachments can be supplied, and can be easily fitted, as all parts are arranged for this. The Turning Chisels are arranged with Adjusting Screws, so that they can be kept absolutely accurate without stopping either the feed or the lathe. The Forming Chisel is automatically lifted on the return of carriage, thus doing away with wear. Price includes one set of Turning Chisels, 3 Dies, 2 Spur Centers, and Countershaft.

Number.	Price.	Length.	Weight.
1	\$178.00	27 in.	1250 lbs.
1	195.00	36 "	1400 "
2	232.00	40 "	1700 "
2	255.00	50 "	1900 "
3	316.00	40 "	2000 "
3	340.00	50 "	2200 "

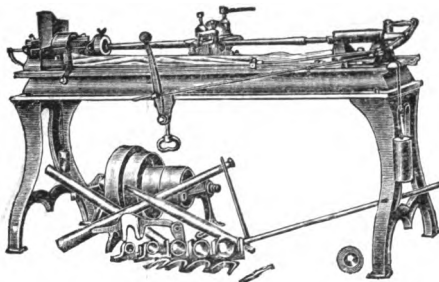


FIG. 3979. SELF-CENTERING AND DISCHARGING GAUGE LATHE.

This Lathe is used extensively for turning Handles for Brooms, Mops, Forks, Hoes, Rakes, small Spokes, Fishing Rods, Faucets, and a variety of pieces used in the manufacture of furniture, woodenware, and agricultural tools, having easy swells and tapers. This Lathe is arranged to automatically center the piece when put in, and to release and drop it down through the bed when finished. The Lathe is supplied with 6 Dies; sizes  $\frac{1}{4}$ , 1,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$  and 2 in. Other sizes can be furnished when desired. Articles up to 2 $\frac{1}{2}$  inches in diam. can be turned with these Dies.

These Lathes are furnished with Hand Feed, as the majority of customers prefer them in this way. We can, however, supply them with Automatic Feed at an additional cost of \$20.00, \$22.50 and \$25.00.

These Lathes will turn from 2000 to 4000 Broom Handles per day, 1000 to 1200 Hoe Handles, and other articles with corresponding rapidity.

The lengths given in table are what the lathe will take in between Centers, by adjusting tail stock they will turn any lengths less than those given. Price includes Countershaft.

46 in. Lathe,	\$120.00;	weight	750 lbs
58 " " "	150.00;		950 "
94 " " "	170.00,	"	1100 "

#### EXTRA HEAVY GAUGE LATHE.

This Lathe is similar in construction and working to the foregoing, but for heavier work. Is furnished with 2 $\frac{1}{2}$ , 2 $\frac{3}{4}$ , 2 $\frac{1}{2}$  and 3 in. Dies. If other sizes are desired, we can furnish larger or smaller.

Lathe 7 ft. 8 in between Centers. Price, \$225.00, weight 2500 lbs.

Lathe 20 ft. between Centers, with Dies 2 $\frac{1}{2}$ , 2 $\frac{3}{4}$ , 2 $\frac{1}{2}$  and 3 $\frac{1}{4}$ , \$325.00.

#### SHORT GAUGE LATHE.

This is a Lathe of the same design as the foregoing, heavy, and used for short stock, taking 4 ft. 2 in. between Centers. Suitable for Plain Neck Yokes, Single-trees, Ball Bats and similar work. Has Automatic Feed, and is Self-Centering and Self-Discharging. Is fitted with Dies 2 $\frac{1}{2}$ , 2 $\frac{3}{4}$ , 2 $\frac{1}{2}$  and 3 in. Capacity about 800 Neck Yokes per day.

Price, \$175.00; weight, 2250 lbs.

#### BROOM HANDLE LATHE.

This Lathe is also similar in construction to the foregoing, but is intended for Broom Handles only, and will turn out from 2000 to 4000 per day. One Die is sent either 1 $\frac{1}{4}$  or 1 $\frac{3}{4}$  inch as desired.

Price Broom Handle Lathe, \$100.00; weight, 700 lbs.

#### LATHE FOR INSULATOR PINS AND BRACKETS.

This Lathe is especially made for turning and threading Insulator Pins and Brackets, for nailing on sides of poles for telegraph and telephone use. Are capable of turning from 2000 to 3000 Pins per day, but of Brackets somewhat less, as they are not as straight work.

Price of machine, \$140.00; weight, 800 lbs.

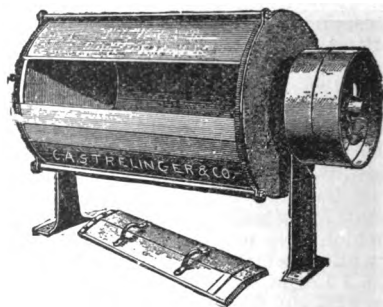


FIG. 3980. TUMBLING MACHINE.

This is a very efficient machine for smoothing Handles. It has iron frame and heads, and the wooden staves are so arranged as to be readily replaced when worn out. The weight of 4 ft. machine is 575 lbs.

Price, 4 ft. \$45.00; 6 ft. \$50.00; 8 ft., \$60.00 Diam. of machines, 30 in.

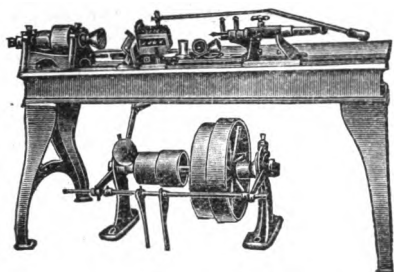


FIG. 3981.

## VARIETY TURNING LATHE.

These Lathes are intended for turning Knobs, Base Ball Bats, Net Floats, Spinning Tops, Spools, Balls, Pipes, Skewers, Wood Faucets, Croquet Mallets and Stakes, Ornaments of all kinds, and in fact a thousand-and-one articles that are in every-day use. On page 679 is shown a line of small wood turnings that are done on this type of machine. From 200 to 1400 pieces per hour can be turned, the quantity depending on size of work and dexterity of the workman. The operation is as follows: The stick is taken in left hand, one end placed in taper mouth of sizing ring, by pulling on the lever the other end of stick is forced into the taper chuck on the driving spindle, which centers and grips the stick instantly. The roughing knife rounds the stick, and when of sufficient length will pass through the sizing die, which is regulated by a stop, the operator pressing his knee on lever under the lathe, this moves the forming knife to the work, and cuts off a turned piece at the same motion.

Price of machine includes one each, Roughing, Cut-off and Tenoning Knives, Sizing Ring, Socket for tail stock, Spindle with Drill Socket or Tenoning Chuck, 4 Taper Screw Chucks, and all Wrenches.

2 Inch Lathe, price, \$175.00; has bed 5 ft. 6 in. long, will turn stock from 2 in. down, and up to 2 ft., 6 in. long.

3 Inch Lathe, price, \$200.00; has bed 6 ft. 6 in. long; will turn stock from 3 in. down, and up to 3 ft., 6 in. long.

3½ Inch Lathe, price, \$225.00; has bed 6 ft. 6 in. long, will turn stock from 3½ in. down.

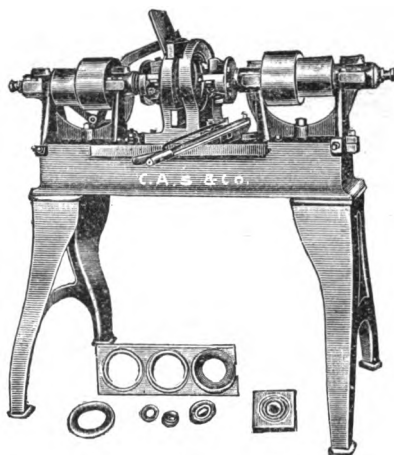


FIG. 3982.

## RING AND ROSETTE MACHINE.

This machine is used for turning Rings, Rosettes, Valve Handles, and similar articles. Work is cut out on a flat board. Machine will cut from 8 in. diam. down, and will turn 3000 3-inch rings per day.

Price includes one pair of Cutter Heads. Price, \$220.00.

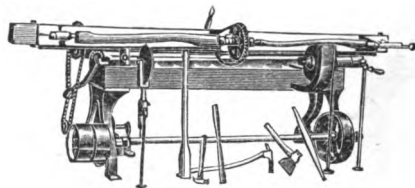


FIG. 3983. IRREGULAR FORM LATHE.

This Lathe is for turning such articles as Axe, Pick and Hammer Handles, also Spokes, and a multitude of other articles, which are either not straight, or have a cross section that is not round. The extreme length that can be turned is 42 in. Ordinary capacity is 200 to 400 Spokes or 200 Axe Handles per day, varying with the length and size. Feed is automatic, and stops itself when the piece has been turned the entire length. With this machine are furnished a Scouring Machine and Sand Belt for smoothing handles.

Price, complete, \$225 00; weight, 1400 lbs.

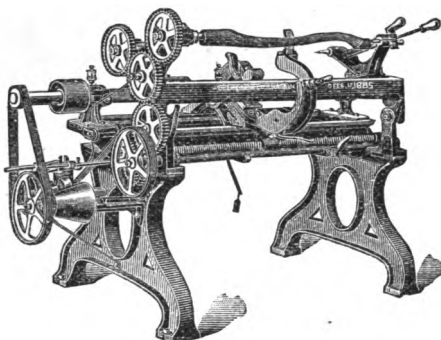
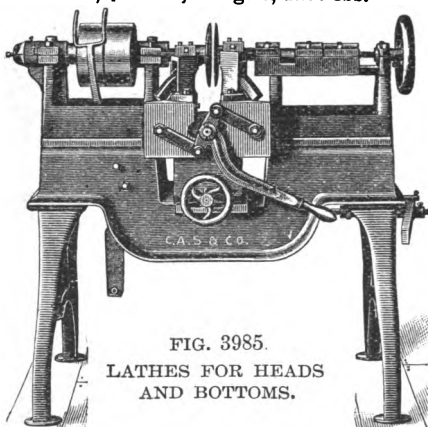


FIG. 3984. NO. 1 HANDLE LATHE.

This Lathe is intended for the same class of work as Fig. 3983. It is of later design than the other, and although somewhat higher in price, will turn out more work. Is suitable for Axe, Adze, Pick, Sledge, Hatchet and Hammer Handles, Spokes and Whiffle trees, and other kinds of irregular work. Will turn from 400 to 600 Axe Handles, 500 to 700 Pick Handles, 1500 to 2000 Hammer Handles, or 1000 to 1500 Spokes per day. Is not suitable for Porch Spindles, Table Legs, Chair Legs or that class of work. Will turn any length from 8 to 43 in.

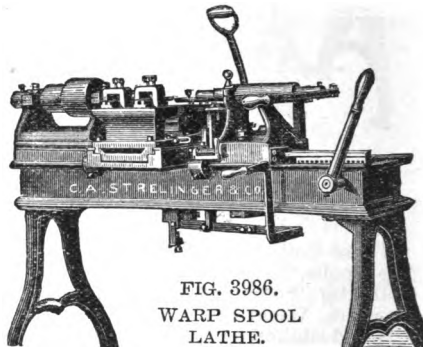
Price, \$275.00; weight, 1200 lbs.

FIG. 3985.  
LATHES FOR HEADS  
AND BOTTOMS.

### TUB AND PAIL MACHINERY.

We are prepared to furnish full or partial outfits of Machinery for making Pails, Toy Pails, Wash Tubs, Butter Tubs, Fish Kits, Dash Churns, etc., etc.,

also Machines for Half-Barrels, Quarters, and Kegs. Machinery consists of Head or Bottom Lathe (as shown in cut), Rotary Mather, Plainer, Hoop Drivers, Stave Saw, Setting-up Plate, Shears, Riveting Horn, etc., etc.

FIG. 3986.  
WARP SPOOL  
LATHE.

### BOBBIN, SPOOL AND CLOTHES PIN MACHINERY.

We are prepared to furnish Roughing and Finishing Lathes for Thread Spools, Bobbin, Jack and Warp Spool Lathes, Clothes Pin Lathes, and Boring, Tapping and Threading Machines.

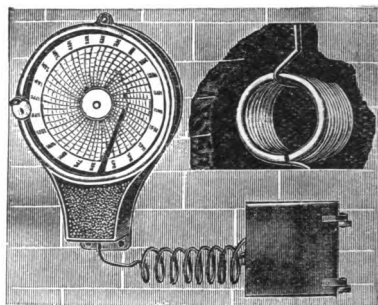


FIG. 3987. RECORDING THERMOMETER.

Makes a continuous record day and night of the temperatures of heaters, dry kilns, etc., etc. The recording portion can be located at any convenient point outside of the room or kiln, within 25 ft. from point at which temperature is to be measured.

No. 600 to 260, No. 602 to 290, No. 604 to 385, No. 605 to 480 degrees Fahrenheit. All have 24 hour charts, graduated to 5 degrees. Price, \$66.65.

Read Article "How You and We Buy" See Index.

**ROSETTE  
MACHINE.**

This is used for making Corner Blocks or Rosettes, turning out from 15 to 20 per minute. The variety of designs is practically unlimited. One set of cutters can be used for quite a number of different designs.

Price, \$250.00; weight 915 lbs.

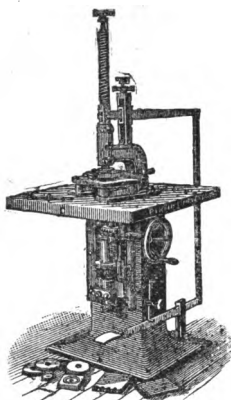


FIG. 3988.

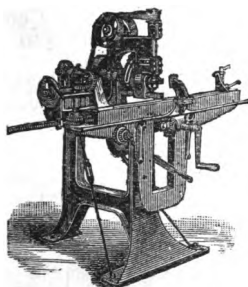
**TWIST  
MACHINE.**

FIG. 3989.

For making all sorts of Spiral or Rope Moulding, either tapered, straight, curved or oval. Any degree of twist is made, from one turn, in  $1\frac{1}{4}$  in. to one in 10 inches.

Will make Right, Left and Pine Apple cuts and do Straight Fluting. Swings 8 in., and will take 5 to 10 ft. between centers, as ordered. Price, according to length, from \$350.00 to \$500.00; weight, 1500 to 1800 lbs.

**BEADED AND ROPE MOULDINGS.**

At the time of writing, these Mouldings are very much in style for building work; for cabinet work they have always been in style, the main objection to their use being the former high cost of making. They are now produced by special machinery in very large quantities, and at very low prices.

**AS TO WOOD**—Oak is the only wood carried in stock. Other woods can be furnished to order only, and cannot be furnished in small quantities, excepting at a greatly advanced cost.

**AS TO STYLE, AND SIZES**—We carry in stock the styles and sizes given

here; can furnish other styles and sizes, but not in small lots.

**AS TO SHAPE**—These Mouldings can be furnished halved or quartered at small extra expense for sawing, the buyer getting the two halves or the four quarters of the material. Sizes under  $\frac{3}{4}$  cannot be sawed, nor will we saw quantities of less than 100 ft. of a kind.

**AS TO LENGTH**—They are made in lengths of about 3 to 4 ft.

**AS TO PRICES**—The prices given here are on small quantities. On account of the expense involved in handling small quantities, the prices are necessarily very high, although, perhaps, one-tenth of what it would cost to make something similar by hand. For any decent sized quantity these prices would be shaded materially.

**AS TO SAMPLES**—Will be pleased to mail samples of all styles upon receipt of 10 cents to cover expenses.



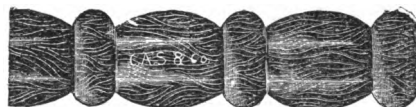
No 2.



No. 7.



No. 15.



No. 19.



No. 22.

FIG. 3990. BEADED MOULDINGS.  
Sizes  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$ . Per ft., \$0.05.



No. 26.



No. 29.

FIG. 3991.  
PLAIN AND FANCY ROPE MOULDINGS.  
Sizes  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $1\frac{1}{4}$ , per ft., \$0.06; sizes 1 and  $1\frac{1}{2}$  in. Per ft., \$0.10.

## SCROLL SAWS.

*See also Scroll Saw Attachments on Circular Sawing Machines.*

We were somewhat at a loss as to where we would place the first two machines shown, these machines being a combination of Lathe and Saw—in fact, it is somewhat of a question as to whether these should have a place in this catalogue, as they are by no means mechanics' tools, or machinery. Our old friend, George B. Grant, insinuates that they are "gotten up to sell to Boys and Ministers of the Gospel."

We sell them principally to parents, to be used as holiday presents to children who are of a mechanical turn of mind. We also sell them to amateurs. They are well made, and under many conditions will be found quite useful.



FIG. 4000.

### COMPANION LATHE AND SAW.

The Lathe takes 15 inches between centers, and has 5 in. swing. Scroll Saw can be taken off by loosening one bolt.

Lathe and Tools, \$7.00; Scroll Saw Attachment, \$1.50; Circular Saw Attachment, \$1.00.

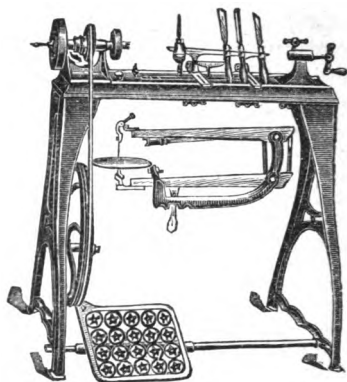


FIG. 4001. GOODELL LATHE AND SAW.

This machine takes 15 in. between centers, and has 5 in. swing; is provided with Face Plate, Spur and Screw Centers, a nice Drill Chuck to hold up to  $\frac{1}{2}$  in., and an Emery Wheel  $4\frac{1}{2} \times \frac{1}{2}$  in.

Price of Lathe and Tools \$10.00; Scroll Saw Attachment, \$2.00; Circular Saw Attachment, \$1.00.

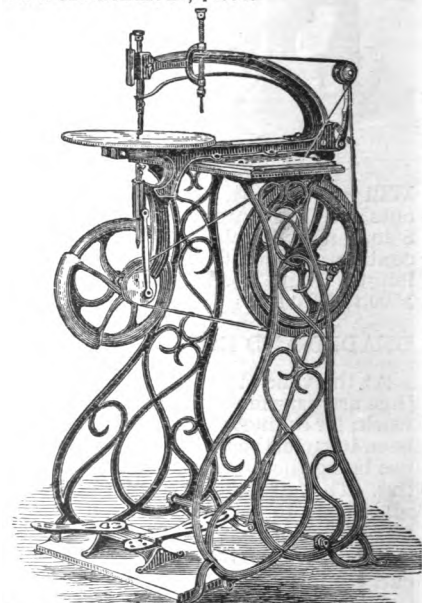


FIG. 4002. "CHALLENGE" SCROLL SAW.

Especially designed for Cabinet Makers, Model Makers, Printers, Jewelers, Amateurs, and all who wish to do fine,

close, and very accurate work in wood, bone, shell, or soft metal. This is the style of machine used for the inlaid work on Pullman and other palace cars. It will cut wood 1 in. and under, and will swing 15 in.

Has Tilting Table that can be changed to any position for sawing inlaid work, a Drilling Attachment and Dust Blower.

Price, complete, \$20.00; weight, 65 lbs.; boxed, 100 lbs. Price, for Steam Power only, arranged to fasten to bench, with Pulley for 1 inch flat belt., no Drilling Attachment, \$10.00.

#### LATHE ATTACHMENT.

Can furnish a nicely made Lathe Attachment to take 10 in. between centers. Swing 4 in., with Rests, Face Plate, Spur Center, Emery Wheel, Turning Tools, etc, price \$5.00.



FIG. 4003. NO. 7 SCROLL SAW.

This is a good, practical machine, at a very low price. It has been on the market about twenty years, and there are not less than fifteen thousand in use. Can be used on soft or hard wood up to 3 in. thick; with reasonable practice will cut pine 3 in. thick at the rate of 1 ft. per minute; 1 in. thick, 4 ft. per minute and hard woods at about one-half this speed. The swing around the

blade under the arm is 24 in.; length of blade, 7 in. Price, \$13.50, with 1 doz. blades. Weight, 55 lbs.; boxed, 80 lbs.

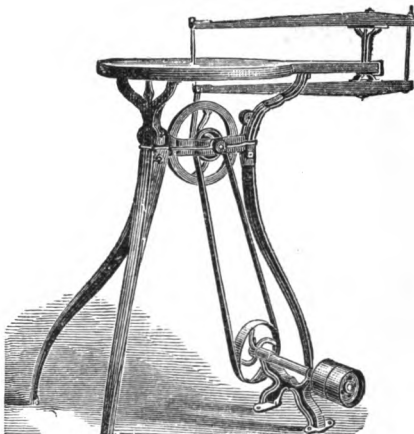


FIG. 4004. NO. 7 POWER MACHINE.

Can furnish the No. 7 Machine arranged with Countershaft, as shown in cut (no foot power).

Price, No. 7 Power Machine, \$18.00.

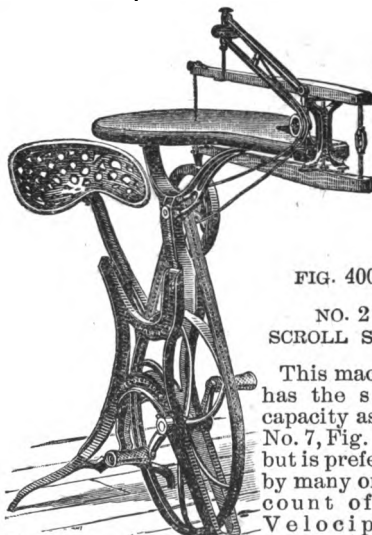


FIG. 4005.

#### NO. 2 SCROLL SAW.

This machine has the same capacity as the No. 7, Fig. 4003, but is preferred by many on account of the Velocipede Foot Power, and on account of having a Boring Attachment.

Price, complete, \$20.00; without Boring Attachment, \$18.00. Weight, 90 lbs.; boxed, 130 lbs.

## SCROLL SAW BLADES.

Scroll Saw Blades for Figs. 4004-5 machines, 7 in. long, and from  $\frac{1}{8}$  to  $\frac{1}{4}$  in. wide, per doz., \$0.75; each, \$0.07.

Fret Saw Blades (fine), 7 in. long; per doz., \$0.25; per gross, \$2.50.

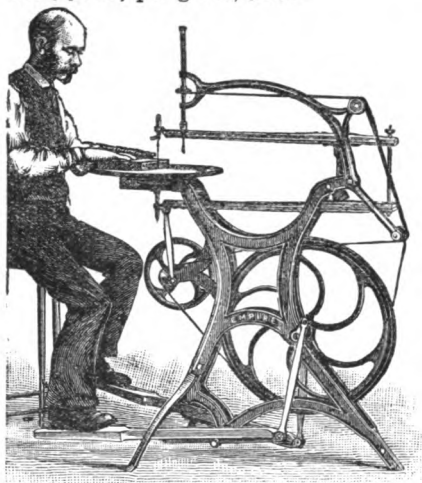


FIG. 4006. "EMPIRE" SCROLL SAW.

This machine cuts stuff up to 3 in. thick, swings 24 in. Has Upright Drill, Tilting Table, powerful treadle motion, cuts rapidly and is easy to operate.

It is designed to use 8 in. saw blades, but can be adjusted to use 5 in. if desired for light work. The average rate of speed when sawing is about 800 strokes per minute. Height from floor to top of table 40 in. The driving wheel is 24 inches in diam., and the belt is of V shape. Great power is obtained without any slipping or lost motion.

The Victor Lathe (Fig. 4011), can be used on this machine.

No. 1 machine, \$27.00, including 1 doz. Blades, Twist Drill and Wrench. Weight, 165 lbs.; boxed, 240 lbs.

No. 2 machine, \$22.50, same as No. 1, but without Drilling Attachment.

Tight and Loose Pulleys for steam power, \$4.50; or furnished in place of the treadle when so desired without extra charge.

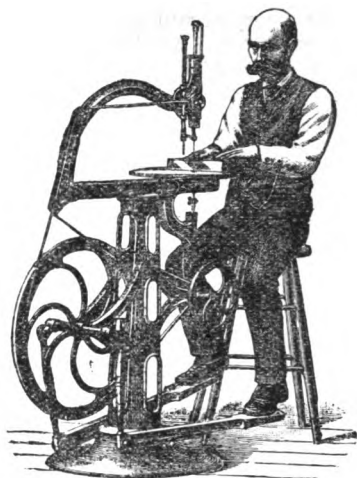


FIG. 4007. "VICTOR" SCROLL SAW.

This machine is designed for Pattern, Model and Cabinet Makers, Carpenters and all Wood Workers who desire a machine of large capacity suitable for close and accurate work. It has Upper and Lower Spindle, Adjustable Tension Spring, Dust Blower, Drill, Tilting Table, etc.; cuts up to 3 in. thick, and swings 24 in.

The Victor Lathe (Fig. 4011) is designed for this machine.

No. 1, \$36.00, with 1 doz. Blades, Drill and Wrench. Weight, 230 lbs.; boxed, 325 lbs.

No. 2, \$31.50, same as No. 1, but without Drilling Attachment.

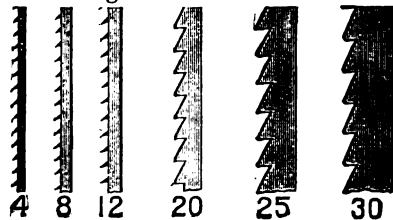


FIG. 4008. "VICTOR" SAW BLADES.

These Blades are intended for use in either the "Victor" or "Empire" machines.

Nos. 4, 8 and 12, each, \$0.03; doz., \$0.25; gross, \$2.50.

Nos. 20, 25 and 30, each, \$0.10; doz., \$1.00.



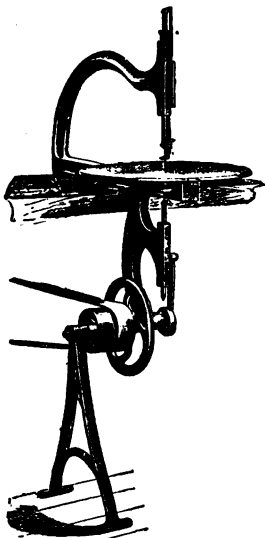


FIG. 4009.

## NO. 4 "VICTOR" SCROLL SAW.

For power only; arranged to fasten to a bench. Has Tight and Loose Pulleys for 1½ in. flat belt. Same capacity as No. 1; has no Drilling Attachment. Price, \$22.50.

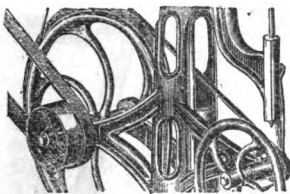


FIG. 4010.

## TIGHT AND LOOSE PULLEYS.

Cut shows method of arranging Tight and Loose Pulleys for using either No. 1 or 2 machine by power. Price of Tight and Loose Pulleys, \$4.50; or they will be furnished in place of treadles when so desired without extra charge.

## POWER.

Do you want Power?

STEAM, WATER, AIR, GAS, GASOLINE. We have Appliances for all. Tell us the conditions and we will do (part of) the rest.



FIG. 4011. LATHE ATTACHMENT.

This Lathe is practical, strong and well finished; can be attached to either the "Victor" or "Empire" machines; takes 18 in. between centers; swings 6 in. Provided with Short and Long Rests, Point, Cup and Spur Centers, and Emery Wheel. Price, \$9.00.

We come now to a line of heavier Scroll Saws for Power only.

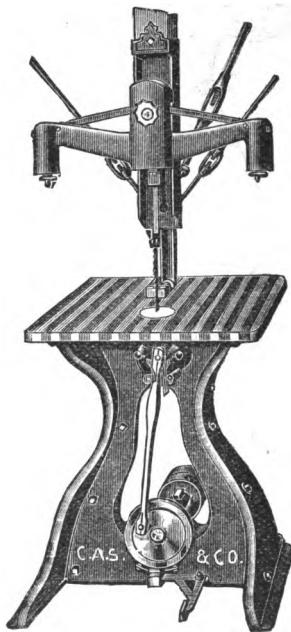


FIG. 4012. NO. 6 SCROLL SAW.

This machine is intended for light and heavy scroll sawing; is well made, of good material, has a Patent Adjustable Strain, which is very simple and durable. Tension on the saw is easily regulated by means of hand wheel. The Combined Belt Shifter and Brake is placed at base of machine; the operator can start and stop machine instantly by a slight movement of the foot.

Price, \$64.60; weight, about 500 lbs.

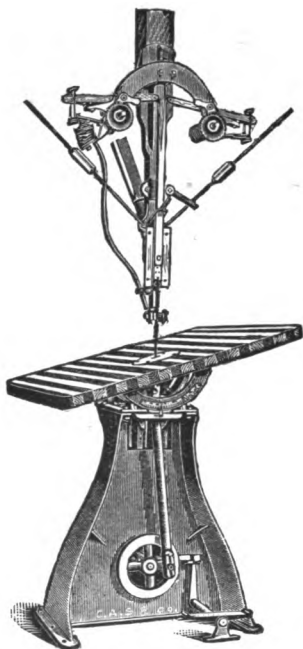


FIG. 4013. NO. 1 BEACH SCROLL SAW.

The Beach Co. have for many years made a specialty of Scroll Sawing machines, and their machines are probably better known than any other. There are over ten thousand of them in use (nearly as many as all other makes put together). We have never heard a criticism or complaint.

It has many points of superiority which go to make it the most easily handled machine in the market. This machine when running can be stopped, changed from a long to a short saw, and started again in less than ten seconds.

Each machine has a plate 8 inches in diam. let into the bed around the saw to prevent wearing hollowing. The Friction Pulley and Combination Brake is a desirable feature, by which the saw is made to start and stop instantly by a single movement of the foot, without shifting the belt. A strong, self-acting steel clamp holds lower end of saw, and broken saws can be used without drilling or punching holes through them.

One simple and useful feature is the Air Pump, which keeps the saw clear

from saw dust, and enables the operator to see just what he is doing.

The bed is 38x40 in., crank shaft  $1\frac{1}{2}$  diam., running in  $3\frac{1}{2}$  in. bearings with pulley between them.

A complete set of Saws, Filed and Set, ready for use, are sent with each machine. Every machine is set up and run at the shop before shipping, so that there is no danger of customers getting faulty machines.

No. 1 machine, \$100.00. This machine has Tilting Table, which is a very desirable feature, especially for pattern work; weight, 500 lbs.

No. 2 machine, \$86.00; this is exactly the same as the No. 1 machine, but with Stationary Table; weight, 450 lbs.

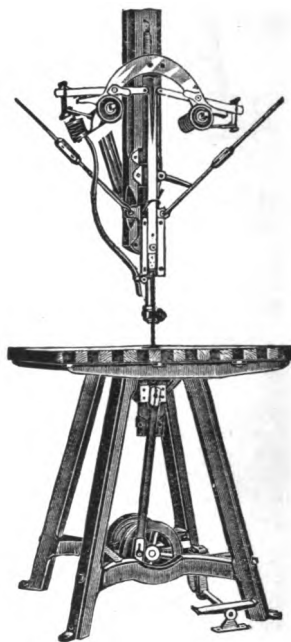


FIG. 4014.

NO. 4 BEACH SCROLL SAW.

The upper works in the No. 4 machine are the same as those in the No. 1. The bed is 36x38 in.; crank shaft, 1 in. diam., with  $3\frac{1}{2}$  in. bearing. The four uprights in lower frame are made of selected rock maple 3 in. square. It is a solid, well made and rigid machine.

No. 4 machine, \$60.00; weight, 360 lbs.

## BAND SAWS.

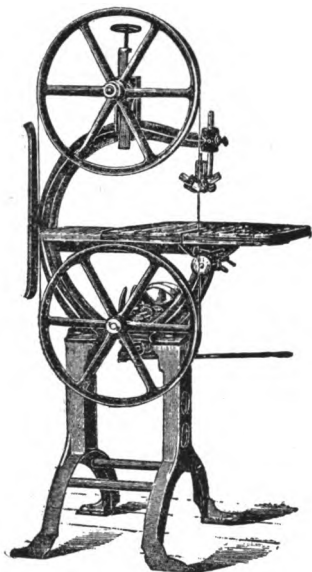


FIG. 4015. BUSH BAND SAW.

This is a new machine brought out to meet the demand for a low priced article. The workmanship is fair, and taken altogether, it is an excellent machine for the money. The wheels are 20 inches in diam., covered with rubber tires; upper wheel can be adjusted to keep saw in alignment, and has also an up and down adjustment of several inches to accommodate saws of different lengths. The table is 20x24 in., glued-up hard wood, and can be tilted to any angle. The saw to frame at back of table 20 in.

Price, \$40.00, including two saw blades and Brazing outfit. Weight of machine, 250 lbs.

## FOOT POWER SAW.

We can furnish the above machine arranged with treadle for foot power at the same price. Some of our customers who have bought these machines, like them, but as they are not geared, they work rather slowly, and somewhat hard as well, and the mechanic who "kicks" this machine for ten hours doesn't need any one to tell him he has been working *that* day.

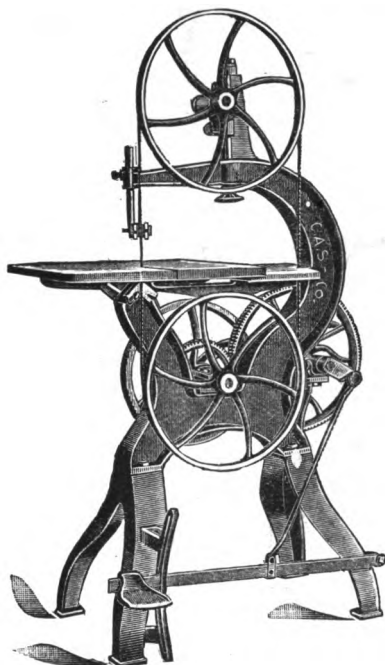


FIG. 4016. 20 INCH HAND AND FOOT POWER BAND SAW.

This is our latest improved 20 in. machine, suitable for medium and light work, sufficiently strong to withstand all demands that may be made upon it. It is a well made tool; the gears are machine cut; table is of wood and tilts for cutting on a bevel.

Saw Pulleys are 20 inches in diam., turned and covered with endless rubber band strengthened with canvass. Will cut to center of 40 in. circle. Top Guide is a roller guide wheel made of hardened steel. Distance between table and upper guides, 7 in. Table is 22x22 in., and is 3 ft., 4 in. from floor. The upper bearing for band wheel is adjustable up and down by means of a hand wheel.

It is the only good Hand and Foot Power machine in the market that we know of.

Price, \$58.50, including one each,  $\frac{1}{4}$  and  $\frac{1}{8}$  Band Saw, Crank Handle and Wrench. Weight, 350 lbs.; shipping weight, 450 lbs.

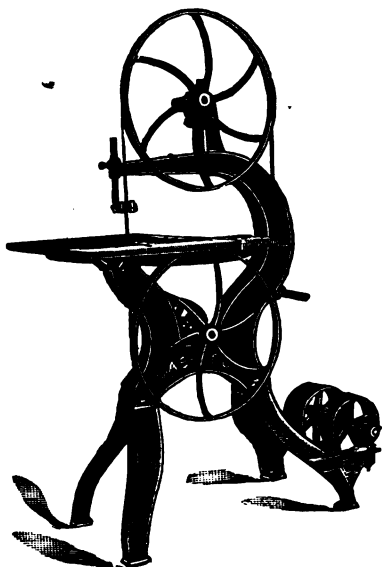
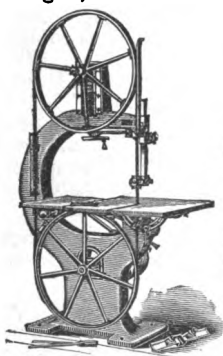


FIG. 4017. 24 INCH POWER BAND SAW.

This machine is of the same type as the one shown in Fig. 4016, but larger; is suitable for blades up to  $\frac{1}{2}$  in. wide. The shipper is furnished; can furnish these machines with or without Countershaft as desired.

The cut shows machine with countershaft.

Price, without Countershaft, \$52.00; with Countershaft, \$58.50. Price includes 2 Band Saws, any size to  $\frac{1}{2}$  in. wide. Weight, 350 lbs.; shipping weight, 450 lbs.

FIG. 4018.  
30 INCH BAND  
SAW.

A first-class, medium size machine. This is well made throughout and the frame is in one piece. Price includes one Blade, Tongs, etc., also Wright's Non-Friction Guide.

Price, Wood Table, \$94.50; Iron Table, \$100.00. Weight, 850 lbs.

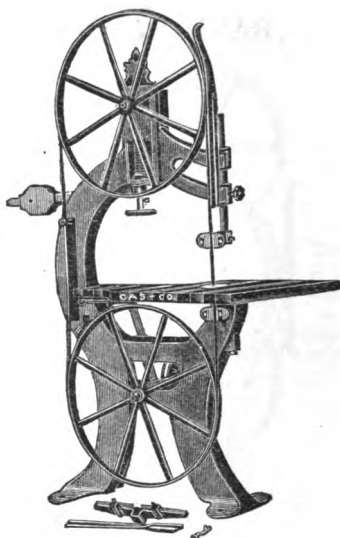


FIG. 4019. 28 INCH BAND SAW.

The above cut shows our 28 in. Band Saw machine, which embraces recent improvements. The machine is well proportioned, the frame being cast in one piece. Upper and lower shafts revolve in self-oiling, connected, double boxes. Table is of iron; Guides are a good style, can be adjusted; can furnish Patent Non-friction Roller Guides at additional cost. The Belt Shifter and all adjustments are within easy reach, the Belt Shifter being so arranged that the machinery may be belted from the top, from below, or from either side. This saw will take 12 in. under the guide. Price, \$90.00; weight, 800 lbs.

### 32 AND 34 INCH BAND SAWING MACHINES.

When desired we can furnish 32 and 34 in. Band Sawing machines. The demand for machines of this style is very small, not enough to warrant making any more than two or three machines at a time. The 36 in. machine is the most popular of the larger sizes; these are made up in lots of 50, with many tools especially arranged for economical production, the result being that when the facilities and large numbers are taken into consideration, it costs but little more to make a 36 in. machine.

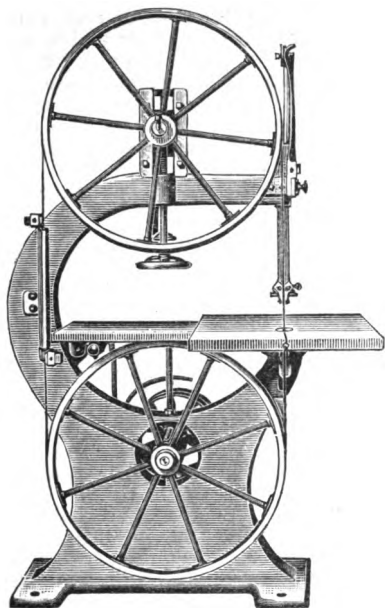


FIG. 4020. NO. 1—36 INCH BAND SAW.

This machine is built from new patterns. The table is of iron, 27x35 in., and adjustable to 45 degrees. The hand wheel regulating tension, also the hand wheel lining the upper wheel, are both operated in front of machine. The guide bar is planed square, and has a patent non-friction saw guide (Wrights' or Mohawk Dutchman, as preferred). Wheels have wood rims; machine saws to 16 in. thick. Price, \$120.00, including one  $\frac{1}{4}$  inch Saw; weight, 1100 lbs.

#### No. 0—36 INCH BAND SAW.

This machine is well adapted to the use of Cabinet, Wagon, Sash and Door Shops, Planing Mills, etc. It is, we believe, one of the very best and most perfect working Band Saws in the market. Wheels are 36 in. diam., 2 in. wide, covered with bent wood, canvas and gutta percha, making them light, strong and elastic. The wheels and pulleys are fastened to the shaft by steel keys and nuts, no set screws being used.

Table is of iron, can be pivoted for bevel sawing, and is fitted with an

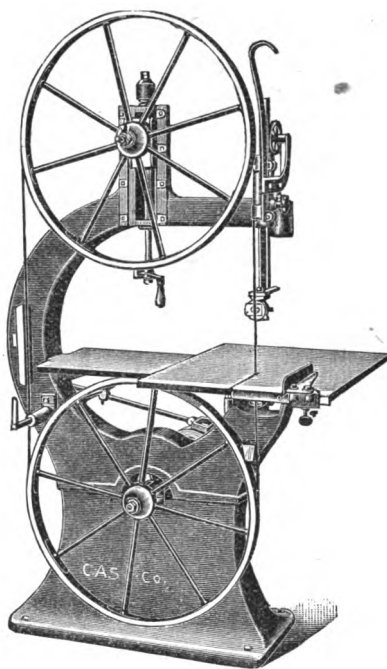


FIG. 4021. NO. 0—36 INCH BAND SAW.

adjustable gauge for sawing parallel pieces. Guide bar is made of wrought iron, square in section, and counter-weighted for convenience in adjusting, and to prevent accident from falling when loosened.

Price includes a Wright or Mohawk Dutchman Non-Friction Saw Guide, as may be preferred.

This machine will take in 15 in. under the upper guide, and 34 in. between the saw and frame. Extreme height, 7 ft. 7 in. Tight and Loose Pulleys are 12 inches in diam., 4 in. face.

Price, \$135.00, including one  $\frac{1}{4}$  inch Saw, Brazing Tools, and a set of Steel Wrenches. Weight 1250 lbs.

#### LARGE BAND SAWS.

We can furnish, when desired, larger size Band Sawing machines; 38, 40, 42 and 44 in. Circulars and prices may be had on application.

## BAND RE-SAWS.

Up to within a few years ago Band Re-Saws were comparatively little used, but since then, the demand for these machines has increased largely. In almost all cases the Band Re-Saw will be found to save from 8 to 12 per cent in lumber, and also increase the out-put from 25 to 40 per cent. We show a small illustration of our 42 in. Band Re-Sawing machine, which is the most popular one we sell. Other sizes and styles can be furnished.

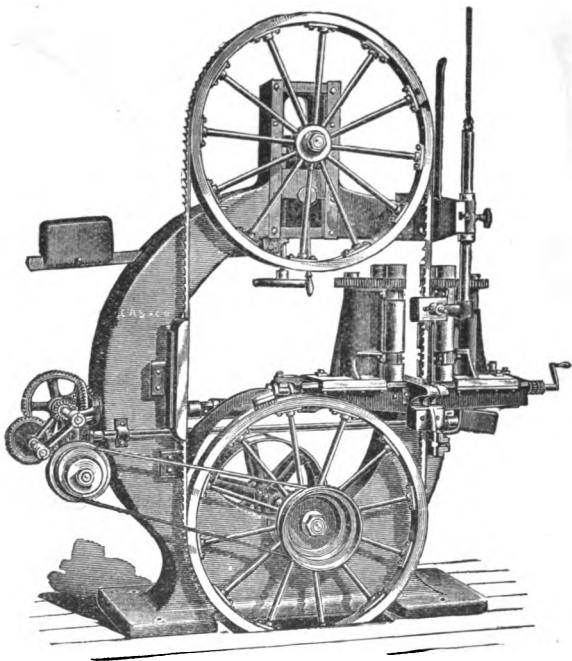


FIG. 4022.

## NO. 3½ IMPROVED BAND RE-SAW.

This machine has a capacity of any width from 1 to 20 in., and to the center of any thickness up to 8 in. The rolls are 4 in number, and are all driven; are placed within  $\frac{1}{4}$  in. of saw blade, holding the lumber perfectly rigid and straight. They are self-centering, thus permitting a 1 in. board to follow another  $1\frac{1}{2}$  in. thick, without re-adjustment, sawing both boards exactly in the center.

If desired, either set of rolls can be stationary while the other yields, enabling the operator to cut a  $\frac{1}{4}$  or  $\frac{1}{2}$  in. slab from a board of any thickness up to 4 in.

If desired, we can furnish this machine for doing scroll work, the knuckle joint being disconnected, feed works being taken off, and an iron table substituted.

The whole feeding apparatus can be instantly tilted for bevel sawing. There are three changes of speed, viz: 40, 26 and 17 lineal ft. per minute. The machine is guaranteed to saw

over 20,000 ft. of bevel siding per day, taking less than  $\frac{1}{8}$  in. kerf.

Price, \$500.00; weight, 4700 lbs.

No. 4 Band Scroll and Re-Saw is of the same general type as No. 3½, but heavier and of larger capacity, having 48 in. wheels, suitable for blades as wide as 4 in. Will take in stock 24 in. under the guide, and cut any thickness to 10 in. Price, \$600.00; weight, 6000 lbs.

## EXTRA.

WE HOPE THE GENTLE READER WILL UNDERSTAND THAT WHAT WE HAVE TO SAY IN THIS CATALOGUE DOESN'T COVER ALL WE KNOW.

THERE ARE THREE OR FOUR (?) THINGS BESIDES, WHICH ON ACCOUNT OF LACK OF SPACE WE ARE COMPELLED TO LEAVE OUT.

IF YOU WANT TO KNOW ABOUT OTHER MACHINERY, WRITE US, AND IF WE KNOW ABOUT IT WE WILL TELL YOU.

**BAND RIP SAWING MACHINE**

This machine is of a type that has come into use but recently. The advantages are, first, in the matter of speed, and second, in economy. It will do about 20 per cent more work than a Circular Rip Saw. A 20 gauge Saw is used, the kerf being less than  $\frac{1}{8}$  in. One of the leading lumber manufacturers in our city put in one of these machines about two years ago, and has since bought eight of them, which speaks more for the machine than words.

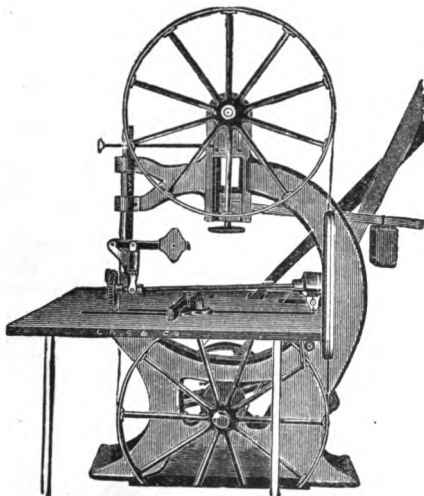


FIG. 4027. BAND RIP SAW.

Has 42 in. Combination Wheels, and is provided with Wright's Anti-Friction Upper and Lower Guides.

The Self-Feeding Attachment is run in a Swinging Bearing pivoted on to brackets at back of machine. Can be adjusted to thickness of material, or raised and swung back out of the way.

The Gauge has Quick Lever Adjustment, and can be set at any desired bevel. Table is of cast iron, 45x54 in. The machine has three speeds, with a capacity of 150, 95 and 60 ft. per minute. Upper Wheel has Lever Adjustable Counterweight to avoid danger of breaking saw from changes of temperature or other causes.

Using Self-Feed Attachment, Saw will take in stock up to 6 in. thick; without the Self-Feed, 12 in. thick.

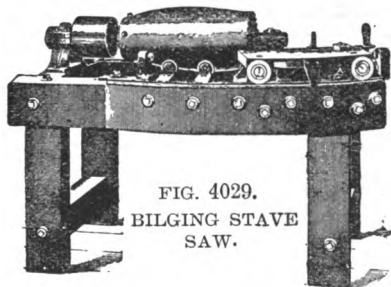
Price, \$330.00; weight, 2150 lbs.

**CYLINDER STAVE SAWS.**

These machines are used for sawing Tub, Pail, Butter Tub, Kit, Churn, and Barrel Staves. Can furnish other sizes besides those given in list.

FIG. 4028.  
CYLINDER  
STAVE SAW.

12 in. diam.,	20 in. deep,	Price,	\$110.00
14 " "	28 " "	" "	155.00
16 " "	32 " "	" "	180.00
18 " "	36 " "	" "	235.00
20 " "	38 " "	" "	275.00
22 " "	38 " "	" "	285.00
22 " "	40 " "	" "	305.00
23 " "	40 " "	" "	330.00
24 " "	38 " "	" "	335.00
24 " "	42 " "	" "	385.00
24 " "	48 " "	" "	450.00
Tub Stave Saw.....			130.00
Pail Stave Saw.....			95.00
Butter Tub Stave Saw..			110.00
Churn Stave Saw.....			160.00

FIG. 4029.  
BILGING STAVE  
SAW.

This is for sawing Well Bucket, Nail, Powder and Syrup Keg, and that class of Staves requiring a Bilge, without bending the Staves.

Bilging Saw for Nail Kegs.....	\$305.00
" " " Powder Kegs....	250.00
" " " Well Buckets....	278.00

**CHAIR BACK SAWS.**

Can furnish Saws similar to the foregoing for sawing Chair Backs. Prices upon application

## BAND SAW GUIDES.

It is a well known fact that where saws run against stationary guide plates, the heat generated by the friction, causes saws to expand and crystallize. This is, no doubt, the greatest cause of saws checking and breaking. There are three or four styles of Patent Non-Friction Band Saw Guides in the market. The "Wright" is the best known, and we presume there are not less than twenty thousand of these in use. The "Mohawk Dutchman" and "Simonds" are also well and favorably known. All of these are first-class in all respects, and we believe the cost of a Non-Friction Saw Guide will be easily covered in less than a year's time, both in saving of blades and ease in working.

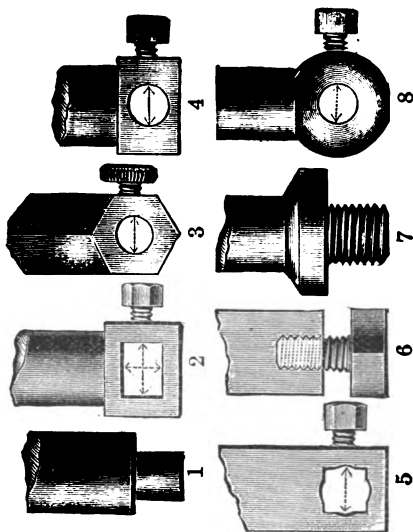
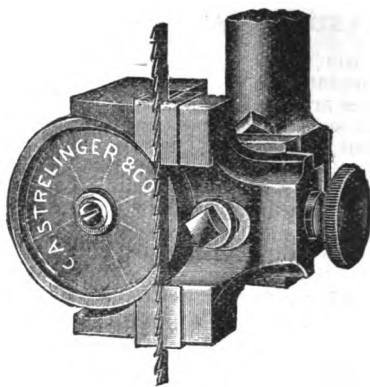


FIG. 4035. POSTS.

In ordering Band Saw Guides, give number of Posts as near as can be judged from above sketches. Also give maker's name of machine, and distance from Post to back of saw. If the Post differs from the above, send sketch giving measurements, also state width of saws.

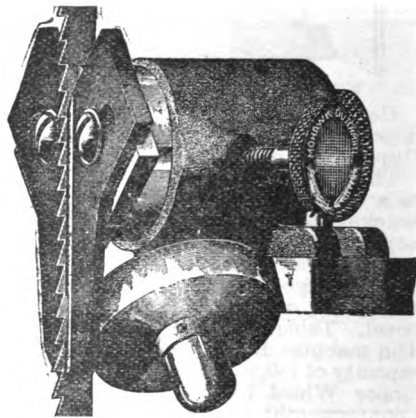
For Under Guides give distance from back of saw to casting, and send rough sketch of how old guide is applied.

FIG. 4036.  
WRIGHT'S IMPROVED NON-FRICTION  
SAW GUIDE.

No. 1 Guide, \$8.50; this is the size most generally used, and is suitable for saws  $\frac{1}{4}$  wide and upwards.

No. 2 Under Guide, \$7.50. The Under Guide, while not as essential as the other, can be used to good advantage in connection with it.

No. 3 Band Mill and Re-Saw Guide, \$11.50; this is a heavy Guide intended for band mill work and especially for large saws.

FIG. 4037.  
"MOHAWK DUTCHMAN" BAND  
SAW GUIDE.

No. 1, \$9.50, suitable for all sizes of band saws; has ball bearings.



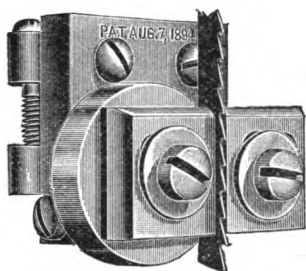


FIG. 4038. THE SIMONDS' GUIDE.

Price, \$8.50. Suitable for all sizes; has ball bearings.



FIG. 4039. BAND SAW BLADES.

( $\frac{1}{8}$  saw coiled  $\frac{1}{2}$  diam.)

We are sorry that we cannot offer to our customers the *best* Band Saw Blades in the world, but then this need not discourage the buyer, for he will have no trouble in finding fifty different concerns who have the *best*, and we are rather unique in being outside of their company. Seriously, our Band Saw Blades are the best that we can procure. We believe them to be equal to any, and much better in quality than the average.

All of our saws are brazed to any specified length without extra charge. For Filing and Setting ready for use, we charge 40 cents extra for all sizes up to  $\frac{1}{2}$  in., and 60 cents for  $\frac{1}{2}$  to  $1\frac{1}{2}$  in. inclusive.

#### PRICES OF BAND SAW BLADES.

These prices are for Blades of standard gauges, and as above stated, include brazing to length. Can furnish tempered stock in the coil to any given length up to 400 ft.

Price of  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{1}{2}$  in. wide, per ft.,

6 cts.;  $\frac{3}{4}$  and  $1\frac{1}{2}$  in. wide, per ft., 7 cts.

$\frac{1}{8}$  in. wide.....\$0.08     $\frac{1}{4}$  in. wide.....\$0.10

$\frac{1}{4}$  " " " " .12     $\frac{3}{4}$  " " " " .13 $\frac{1}{2}$

1 " " " " .15     $1\frac{1}{4}$  " " " " .18

$1\frac{1}{2}$  " " " " .22     $1\frac{3}{4}$  " " " " .27

2 " " " " .32



FIG. 4040. SILVER SOLDER.

Silver Solder is generally conceded to be the best material for brazing band saws. Our Silver Solder is guaranteed to be equal to any, and much better than the average; it contains from 10 to 20 per cent more pure silver than is common. Inferior Solder can sometimes be recognized by the yellow, brassy color; ours is almost pure white. A special feature is the thickness. The average Silver Solder is about .012 thick, while ours is .005. Our Solder is amply thick for all requirements, and where thicker solder is used, the surplus is filed off and simply goes to waste, so that one ounce of the thin will do quite as much good work as two ounces of the thick solder. Comes in rolls and is about  $\frac{1}{4}$  in. wide. Price, per oz., \$1.35;  $\frac{1}{2}$  oz., \$0.75.

#### SPECIAL BAND SAW SOLDER.

There are a dozen or more concerns offering Band Saw Brazing Solders that are claimed to be just as good as Silver Solder, and selling at from 5 to 25 cents per ounce (80 cents to \$4.00 per lb.). To the best of our knowledge these Special Solders are all practically the same thing—that is—regular Brazing Spelter, such as is found on page 818 of this catalogue. It is an excellent material for brazing band saws, but in our judgment, not by any means equal to the Silver Solder, and to those of our customers who, for reasons of (questionable) economy, prefer a cheaper article, we would recommend the Brazing Spelter—unless they prefer to pay some one else from 75 cents to \$4.00 per lb. for the identical material that we list at 28 cents.

## BRAZERS AND LAMPS.

There are in the market a great variety of Band Saw Brazers and Lamps. We present here two Brazers which are, we believe, the best of their respective types. The old-fashioned brazing tongs and clamp holds its own pretty well, but this method is rather clumsy and tedious, takes a great deal of time, and the joint is rarely true and straight, especially on small work, as the heavy tongs are apt to bend and crook the saw.

Within the past year we have sold large numbers of the Gasoline Electric Forge (page 811), to be used in connection with the ordinary brazing clamp.

For saws up to 1 inch in width it is the most effective brazing outfit we know of. It does the work quickly and well, costs considerably less than any of the brazing machines, and the forge can be used for many other purposes about the shop, such as burning off paint, heating soldering irons, etc., etc. Some people object to these forges on account of a prejudice against gasoline, but there is really little—if any—danger.

However, we must leave it to the purchaser to judge as to what he will have, simply stating that they are all good.

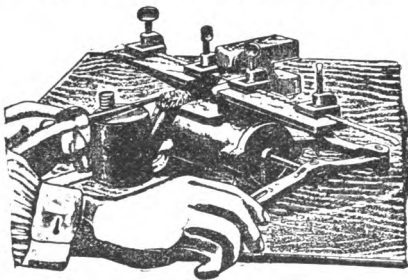


FIG. 4041. BAND SAW BRAZER.

This, like the following, is suitable for saws of all widths up to 1½ in. It is designed so that one casting answers the purpose of a Scarfing Frame, Brazing Clamp and Air Pump. With this machine a saw can be brazed in less than three minutes, and the time consumed in filing the laps, brazing and dressing the joint need not be more than from five to eight minutes. Price, \$10.00.

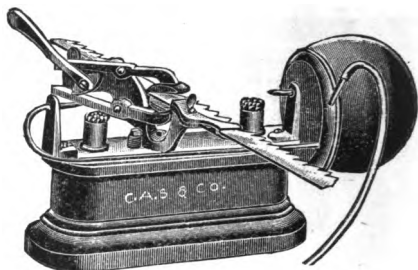


FIG. 4042. BRAZING LAMP.

This lamp is used with kerosene; the two flames meeting at the saw produce great heat. Saws are brazed free from kinks and curved backs. Is suitable for band saws of all widths up to 1½ in. Price, \$10.00.

## BAND SAW SETS.

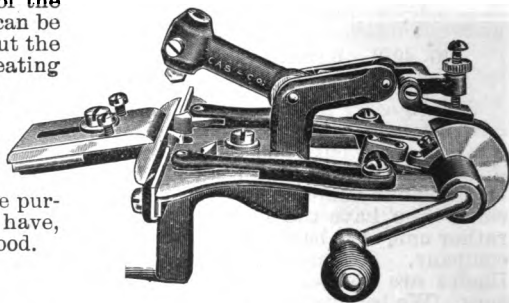


FIG. 4043.

AUTOMATIC BAND SAW SET.

This is a very simple and effective tool. We have sold it for twenty years; have never had but one returned (so long ago that we have quite forgotten the reason why). By simply turning the crank, it sets from 75 to 150 teeth per minute.

Price, \$7.00.

We have just brought out a new machine of this same style, heavier, stronger, and somewhat better made. It costs more, the price being \$12.00. For those who have a good deal of work to do, we think it is well worth the difference. Is suitable for blades from ½ inch wide upwards, and for any saw where the teeth are not coarser than ½ in. apart. Descriptive circular will be sent upon application.

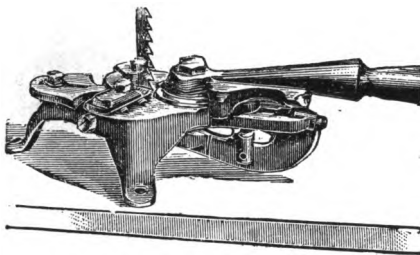


FIG. 4044.

**LITTLE GIANT BAND SAW SET.**

The "Little Giant" Band Saw Set is well known, and this machine has some improved features which make it more desirable than the old style. This Set, as well as the following one (Fig. 4045) is of a different type from the Automatic Band Saw Set (Fig. 4043), in that it works right and left-hand, setting each tooth as it goes along instead of having to set one side and then turn the saw blade around to set the other. Is used on saw while on the machine—a convenient feature. Price, \$10.00.

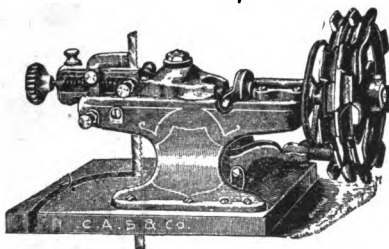


FIG. 4045.

**STAR BAND SAW SETTING MACHINE.**

This machine will set saws from  $\frac{1}{2}$  to 2 in. wide; will set an ordinary saw in six minutes, giving it a correct and uniform Set. Is intended for power, but may be used with hand wheel, which is furnished if desired. Gives better satisfaction when used by power. Price, \$13.50.

**BAND SAW FILERS.**

Band Saw Filing machines have been greatly improved during the past ten years. Eight or ten years ago we sold numbers of an imported Band Saw Filing machine at \$125.00 each. To-day we furnish as good a machine at one-third of the price.

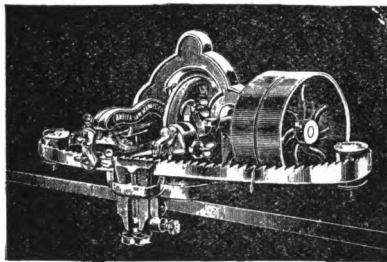


FIG. 4046. PERFECT FILING MACHINE.

The above cut illustrates a machine for filing band saws, which is simple, practical and reasonable in price. The use of this machine will save two-thirds of the ordinary expense as compared with hand filing.

Price, complete, \$35.00. Counter-shaft, if desired, \$5.00.

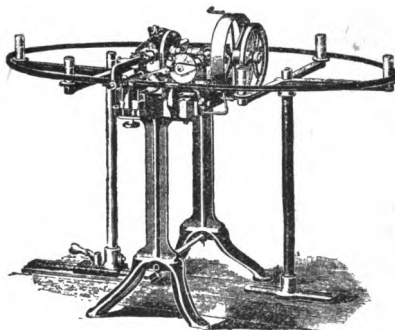


FIG. 4047.

**WATERBURY BAND SAW FILER.**

This machine is somewhat similar in its action to the foregoing, but of different design. It will file an ordinary 20 ft. band saw in ten minutes better than an experienced workman can file the same by hand. Accurately joints each tooth in filing, thereby lessening the liability of saws breaking; is adjustable for saws from  $\frac{1}{2}$  to 2 $\frac{1}{2}$  in. wide; uses an ordinary 6 or 7 in. taper file, which swings into position, removing burr at the finish the same as in hand filing. Can be instantly started or stopped at any point, by a clutch mechanism, without shifting the driving belt.

Price of Floor machine fitted with Legs, Reels, Standards, etc., complete, \$45.00. Bench machine, \$38.00.

## FOOT AND HAND POWER SAWING MACHINERY

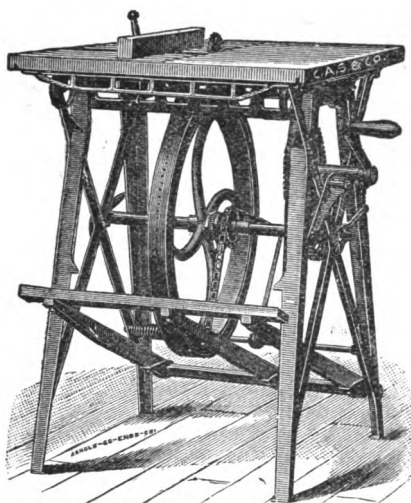


FIG. 4048. COMBINED MACHINE.

This is the best machine *for the money* that we know of, is well built, and for those who cannot afford the higher-priced machines, it will be found an admirable substitute. Circular Saws up to 8 inches in diam. can be used; Emery Wheels up to 1 in. thick by 6 inches in. diam. can also be used to good advantage.

Price, including one each, 6 in. Rip and Cross-Cut Saws, \$35.00. Counter-shaft, for steam power, \$10.00.

### COMBINED MACHINE ATTACHMENTS

With the above machine we can furnish several extra Attachments. These Attachments can be purchased at any time, as all machines are arranged so that they will fit.

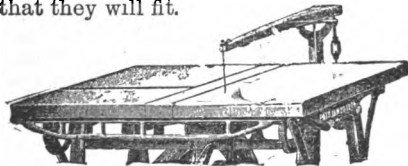


FIG. 4049. SCROLL SAW ATTACHMENT.

Price, complete, with 12 assorted Scroll Saw Blades, \$5.00

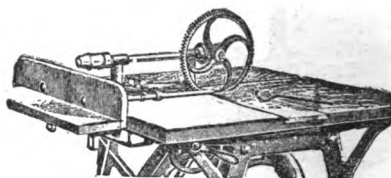


FIG. 4050. BORING ATTACHMENT.

This Attachment has a sliding table upon which the work is placed, table is adjustable up and down, spindle is fitted with Chuck Holding Round Shank Bits from  $\frac{1}{4}$  to  $\frac{3}{4}$  in. Price of Attachment, \$10.00.

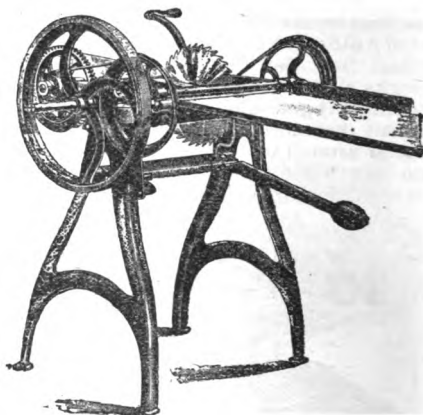


FIG. 4051. HAND CIRCULAR RIP SAW.

This is the well known Barnes' machine, which has been on the market for about twenty years. It is suitable for any thickness of stock up to  $3\frac{1}{4}$  in. The stock is placed between feed rollers, which feed it to the saw, these rollers being self-adjusting between thick or thin lumber. An operator with ordinary endurance can rip 600 ft. of 1 in. pine per hour. The work is true and square and easily dressed with the plane. The table is provided with an Adjustable Gauge, and by means of a hand-screw can be readily raised or lowered to govern depth of cut. Rabbits, bevels, tenons, etc., can be cut to advantage. Saws 10 inches in diam. are used, two of which are sent with machine.

Price, \$40.00; weight, boxed, 275 lbs.

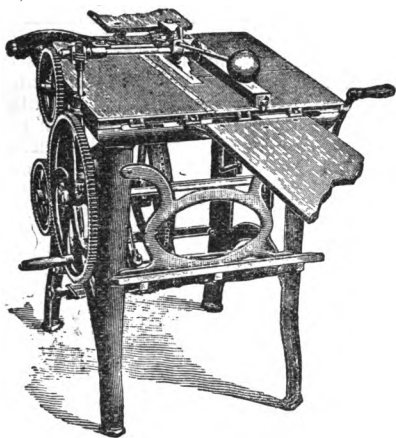


FIG. 4052.

## CIRCULAR SAWING MACHINE.

(Showing machine arranged for Ripping, with Self-Feed Mechanism in position.)



FIG. 4053.

## CIRCULAR SAWING MACHINE.

(Showing machine with Self-Feed Ripping device thrown back, and the table cleared for cut-off work.)

The machine shown in Figs. 4052 to 4054 is quite new, having been brought out within the past six months. It is strong and rigid, the table being of iron planed true. Can be used as a Hand and Foot Power Circular Saw with Self

Feed; with a 10 in. saw, lumber up to 3½ in. thick can be ripped; with a 12 in. saw, 4½ in. The Self Feed can be used for Grooving and Rabbetting, and table can be adjusted up and down to regulate depths of groove. Speed of saw can be changed readily so as to give a high speed for Cross-cut and a slower speed for Ripping. The Attachments that can be furnished with this machine are, the Boring Attachment, Universal Miter Gauge (shown in Fig. 4054), which is used more particularly by picture frame makers and for any other work where an accurate joint is required. The joint can be made by cutting both ends at the same time. The Gauge is provided with Clamping Screws to hold the work in position, and if desired the moulding can be nailed before taking from the gauge.

While the machine is designed particularly to be used by hand and foot power, it can be driven equally well by steam or other suitable motive power, and we shall therefore be prepared to furnish the machine arranged with Countershaft and Belt Pulley when so desired.

We show several cuts which indicate not only the general appearance and construction of the machine, but the wide range of work which it is calculated to perform.

Machine, complete with Self Feed, one each, Rip and Cross Cut Saw, 10 in., \$60.00; with Countershaft for steam instead of foot power, \$65.00.

Boring Attachment, extra, \$10.00. Universal Miter Gauge, \$10.00; Countershaft and Belt Pulley, \$10.00.

Weight, of machine, 400 lbs.

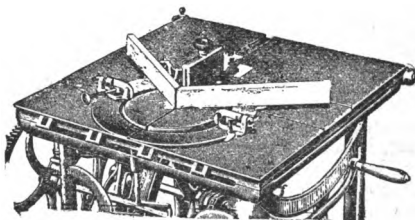


FIG. 4054.

## CIRCULAR SAWING MACHINE.

(Showing machine with Special Universal Gauge.)

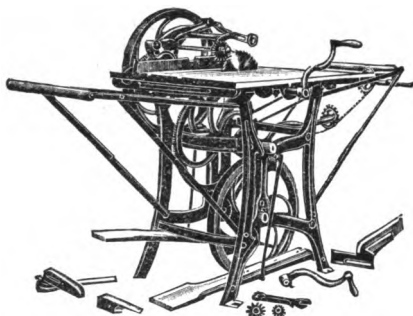


FIG. 4055.  
COMBINATION SAW—COMPLETE.  
(Arranged for Self-Feed Ripping.)

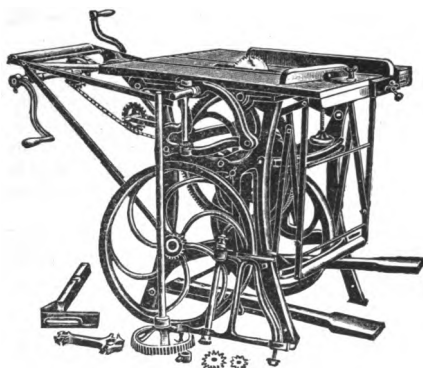


FIG. 4056. COMBINATION SAW.  
(Showing machine with Self-Feed Ripping Device partly detached.)

This is a new Combination Sawing machine designed for Carpenters, Cabinet Makers, Box Makers, Pattern Makers and Wood Workers generally. It is strong, substantial and thoroughly well built, having a strong iron frame and adjustable boxes; is suitable for Ripping, Cross Cutting, Mitering, Rabbeting, Grooving, Gaining, Dadoing, Edging Up, and with the extra attachments, for Boring, Shaping, Scroll Sawing, Beading, etc.

The Self-Feed Ripping device has a feed which is self-adjusting for all thickness of work, and is positive in its action. The feed has three changes of speed (it should be understood that the Self-Feed Ripping device is operated by hand power). The hand power is so

arranged as to enable the operator to stand erect and in a natural position.

The table is 28 in. wide by 36 in. long; the middle portion, 10 by 36 in., is of iron planed perfectly true; in the center are fitted two hard wood strips which are easily adjustable. In the iron are two plain grooves running the entire length, and two adjustable sliding cross-cut or miter gauges, well fitted to the groove, thus securing accuracy. The table top is provided with right and left-hand Ripping Gauges, and is hinged so that it may be adjusted up or down by the hand-screw in front for Rabbeting, Grooving, Dadoing, etc. It has Adjustable Extension Rolls both front and rear, hinged in such a manner that they can be instantly opened up, adding 4 ft. to length of table for ripping long stuff, and can be closed down out of the way when not required. The Front Extension Roll is intended to be used only with the Self-Feed Ripping device. Any size saw from 5 to 10 in. can be used, and will project as follows:

5 in. saw, 1 in.; 6 in.,  $1\frac{1}{2}$  in.; 7 in., 2 in.; 8 in.,  $2\frac{1}{2}$  in.; 10 in.,  $3\frac{1}{2}$  in. above top of table.

With this machine one man can rip soft wood up to  $3\frac{1}{2}$  in., and hard wood to 2 in. thick. Can do four times as much work as with a hand saw, the machine besides being equally valuable for cross-cutting and various other work.

Combination Saw, complete, as shown in cut, with one each, 7 and 10 in. Rip, and one 7 in. Cross-Cut Saw, \$75.00.

We can furnish a pulley so that the machine can be used for power, at an additional cost of \$2.00. Special Countershaft for power, \$12.00. Weight, 480 lbs.; boxed, 590 lbs.

OUR HAND AND FOOT POWER MACHINES ARE WELL MADE AND ARE SUPERIOR IN ALL RESPECTS. IN COMPARING OUR PRICES WITH THOSE OF OTHER MAKES, PLEASE COMPARE CAPACITIES AND WEIGHTS. MANY OF THE MACHINES ON THE MARKET ARE VERY LIGHT AND SO FLIMSILY MADE, THAT THEY RATTLE THEMSELVES TO PIECES WITHIN A YEAR OR TWO.



FIG. 4057. PLAIN COMBINATION SAW.

This represents the same machine as the foregoing without the Self-Feed Ripping device, Front Extension Roll, and other parts pertaining to same. The Self-Feed Ripping device cannot be fitted to this machine after leaving factory. It is suitable for Cross-cutting, Mitring, Rabbetting, Grooving, Dadoing, etc., etc. It serves very well for light ripping, but where there is much of this work to do, the other machine is preferable. Price, with one each, 7 in. Rip and Cross-Cut saws, \$60.00. Pulley for power, \$2.00; Special Counter-shaft for power, \$12.00.

Weight, 360 lbs.; boxed, 450 lbs.

#### COMBINATION SAW ATTACHMENTS.

Desirable features about these machines are the various Attachments which can be furnished at moderate expense.

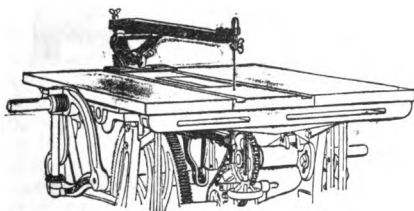


FIG. 4058. SCROLL SAW ATTACHMENT.

This attachment can be easily and quickly placed in position, thus providing a serviceable scroll saw that will cut to 3 in. thick and swing 24 in. Scroll Saw Attachment, with 1 doz. 8 in. blades, \$7.00.

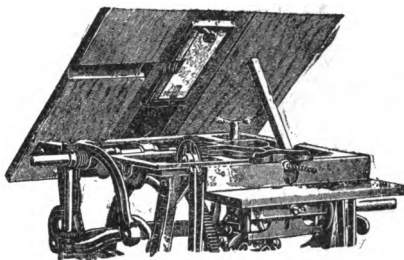


FIG. 4059. BORING ATTACHMENT.

Can be put on or taken off instantly, has an Adjustable Sliding Table and stops, to gauge depth of hole. The spindle has socket  $\frac{1}{2}$  diam. for round shank bits. Price \$8.00.

#### BITS FOR BORING ATTACHMENT.

The Bits we use for this are the genuine Russell Jennings' machine bits with  $\frac{1}{2}$  in. round straight shank.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Each,	\$0.50	\$0.55	\$0.60	\$0.70	\$0.75	\$0.85
Size,	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1 in.
Each,	\$0.90	\$1.00	\$1.10	\$1.30	\$1.50	

Intermediate and larger sizes can be furnished when desired.

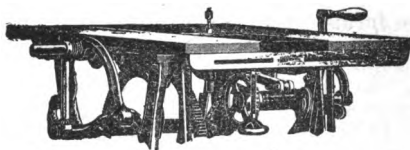


FIG. 4060. MOULDING ATTACHMENT.

This is a valuable attachment; is designed for edge moulding, beading, etc., using the Moulding Cutters shown elsewhere. Spindle has vertical adjustment for different thicknesses, and is made to run in either direction to suit the grain of the wood.

Price of Moulding Attachment, \$7.00. Cutters as per list, (see index).

**TEARING CATALOGUES**—Every article in this catalogue is very plainly described, either by figure number, regular number, or name; and we beg our customers not to cut or tear the pages, as this mutilates catalogue and destroys it for future reference.

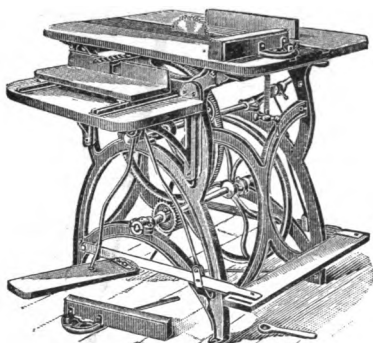


FIG. 4061. HAND AND FOOT POWER CIRCULAR SAW.

This machine we have sold for upwards of twenty years, and while during that time there have been a great many different styles, up to within a few years ago it was the *only* foot power circular machine that could be considered as first-class in all respects. In fact, at the present time we believe there is but one machine that equals it, and that is the one shown in Fig. 4057. This last named machine has one advantage, in that it can be supplied with Self-Feed Ripping device, Scroll Saw Attachment, and Moulding Attachment. The only attachment that can be furnished with the Hand and Foot Power Circular Saw is the Boring Attachment.

The table is 28x37 in.; the grooves for gauges are planed in an iron top, which is 10 in. wide. Gauge tongues are of steel and accurately fitted. The 20 in. and 5 in. gears are of iron, the 2 in. pinion of gun metal, and all gears are carefully turned and accurately cut.

We recently had one of these machines sent in for repairs that had been used constantly and hard for eighteen years. The cost of repairing was about \$10.00, and the machine was then practically as good as new.

No. 1 machine, \$54.00; with Boring Attachment and Side Treadle, as shown in cut, \$60.00. Price includes one each, 7 in. Cross-Cut and Rip Saws, 2 Cutting-off Gauges, one Rip Gauge, 2 Crank Handles and Wrench. Weight, 420 lbs.

No. 2 machine is identical with No. 1, excepting that it has a heavier balance wheel, giving more power. Is sold at an additional cost of \$4.50.

## POWER SAWING MACHINERY.

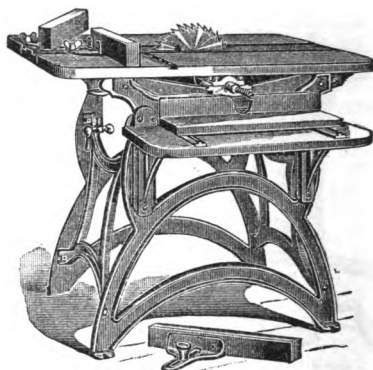


FIG. 4062. POWER CIRCULAR SAW.

This is practically the same machine as the one shown in the foregoing cut, but arranged for power only. The pulley is 3 inches in diam., 4 in. wide and is placed on an arbor between the bearings. Although not very heavy, it is a well made machine, and for medium and light work will prove a very desirable one.

Machine only, \$36.00; Countershaft, if desired, \$13.50; Boring Table, \$5.00.

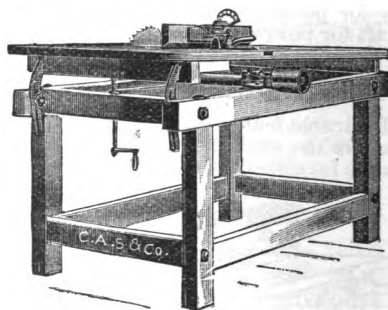


FIG. 4063. IMPROVED SLITTING SAW TABLE.

The frame work of these machines is made of black birch and rock maple, thoroughly seasoned and kiln-dried. The tops are glued up of narrow strips, and so cleated that they cannot warp or split. The saw arbors are self-oiling, and are made of steel. They are furnished with pulley between the bearings,



or outside as may be preferred, also with Patent Combination Saw Gauge. The Tables are made in six sizes, as follows. No. 3 weighs 400 lbs.

No.	Price.	Size of Hole Table, in Saw.	Size Saw to Use.	Width of Belt.
0	\$32.00	26x42 $\frac{1}{2}$	6 to 8 in.	3 in.
1	39.50	31x46 $\frac{3}{4}$	8 "12 "	4 "
2	47.50	34x54 1	10 "16 "	4 $\frac{1}{2}$ "
3	51.50	36x58 1 $\frac{1}{2}$	16 "20 "	5 "
4	55.00	38x64 1 $\frac{3}{4}$	20 "24 "	6 "
5	59.00	41x70 1 $\frac{3}{4}$	24 "30 "	7 "

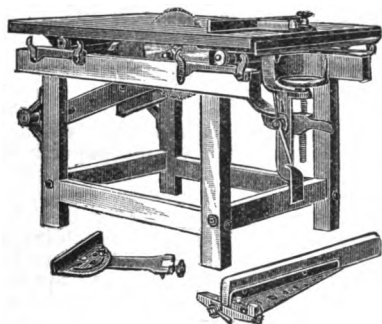


FIG. 4064.

#### IMPROVED COMBINATION SLITTING AND CUT-OFF SAW TABLE.

In above cut machine is arranged for cross-cutting. The bed is mounted on Patent Roller Bearings in such a manner that the whole table is made to move back and forth, carrying the work absolutely square with the saw. The table runs so easily, it requires less than one pound pressure to move it under any load, from one to 300 lbs. The frame work is made of black birch and rock maple, thoroughly seasoned and kiln-dried; the bed is glued-up of narrow strips and securely fastened to heavy iron cleats, so it cannot warp or split. A throat 5 in. wide is placed in each table; this is quickly removed for dado cutting and all similar work.

No. 1, \$67.50, has bed 33x46 in.; is suitable for saws from 8 to 12 in. diam.

No. 2, \$90.00, has bed 38x58 in.; is suitable for saws from 14 to 20 in. diam.

The price includes Countershaft complete, and one each, Slitting, Cross-cut and Miter Gauges. No. 1 weighs 650 lbs.

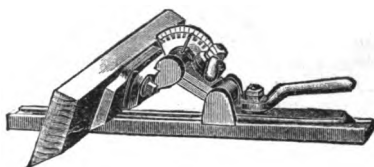


FIG. 4065. COMBINATION SAW GAUGE.

This cut shows the style of Saw Gauge used with the Improved Slitting Saw Tables, Fig. 4063. Can be set on any bevel. Can be readily attached to any common saw table, and as a labor-saving device it is a complete success.

No. 1, \$5.75, with Bed Plate either 14, 16 or 18 inches long

No. 2, \$6.25, with Bed Plate either 22, 24, 26 or 28 inches long.

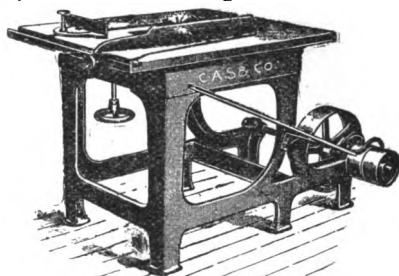


FIG. 4066. IRON SAW TABLE.

This machine is designed for both Ripping and Cross-cutting. It is all of iron, and is in all respects a well made machine. Price includes Countershaft, and one each, Cut-off and Ripping Gauge. Table is 28x32 inches. Size of arbor  $\frac{1}{2}$  in., and takes a saw with  $\frac{1}{2}$  inch hole. Price, \$60.00; weight 500 lbs.

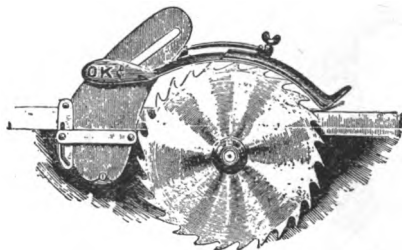


FIG. 4067. SAW GUARD.

It would seem unnecessary for us to expatiate upon the necessity of a reliable protection from accident on Circular Saws. This device not only does away

with danger to the operator, but saves time by preventing annoyance from splinters and saw-dust.

The Robbins Table Co. write, "Your Guards are complete in every detail, are easy to put on the machine, and a workman cannot possibly get his hand on the teeth of the saw. One of our saws has a record of three men cut and five fingers lost in one year, but since we put on your Guards there has not been a single accident."

No. 1, \$6.00, for any saw up to 16 in. diam.

No. 2, \$7.00, for saws between 17 and 24 in. diam.

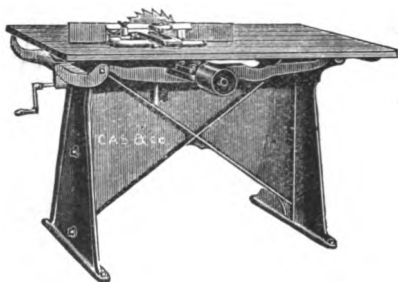


FIG. 4068. NO. 1 SAW BENCH.

This is a machine just brought out. It has iron frame and wood top. Will carry saws up to 24 inches in diam.; has a good adjustable gauge; top is 34x56 in., glued up in strips, hinged at back and adjusted from front by crank. Weight, 415 lbs.

Price, with Gauge, \$55.00; Counter-shaft, extra, \$16.50.

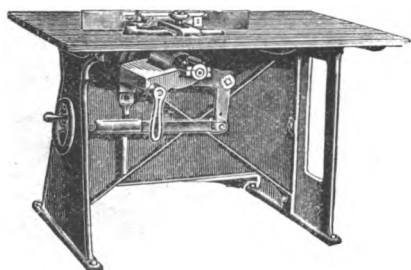


FIG. 4069. NO. 2 SAW BENCH.

This machine is the same as the foregoing, excepting that it is arranged with Arbor to raise and fall instead of

table. Is suitable for saws up to 22 in. diam. Weight, 435 lbs.

Price, with Gauge, \$67.50; Counter-shaft, extra, \$16.50.

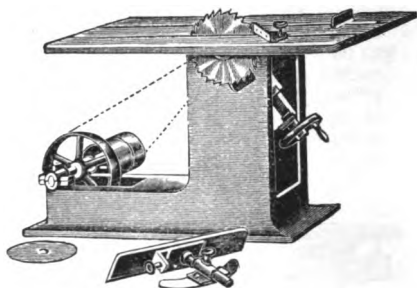


FIG. 4070. NO. 1 DIMENSION SAW.

This machine and the one which follows are two of the most popular Sawsing Machines that we sell. Are made from new patterns, and are designed for both general and special work in Carriage, Pattern, Furniture, Moulding and Picture Frame factories. The iron table is well braced, and measures 80x48 in. It is planed true and has grooved ways planed in it on each side of saw, so that interchangeable, cross-cut and miter fences can be used. The Ripping Gauge can be angled to any bevel; all gauges can be removed in a moment's time; throat piece in table is removable, so that grooving saws and dado heads can be used. With each machine we furnish one each, 12 in. Rip and Cross-Cut Saw; Collars, Flanges, one Bevel Gauge, one Angle Cross-cut Gauge, and one Square Cross-cut Gauge.

Price, \$90.00; weight, 750 lbs.



FIG. 4071. NO. 2 DIMENSION SAW.

This machine is of the same general type as the foregoing. It is very useful for general purposes, and especially so for pattern work. The machine is

heavy, self-contained, and the table may be tilted to 45 degrees. The table measures 36x48 in.; degree marks are cut in front radius, indicating angle of table while tilted. With each machine we furnish one 18 in. Saw, Ripping, Cross-cut and Miter Gauges, Wrenches, etc. Price, \$125.00; weight, 1200 lbs.

### UNIVERSAL SAW BENCH.

The range of this machine adapts it for every variety of Straight and Angular Sawing, which it does rapidly, and with such accuracy that the plane is hardly necessary to perfect the finish. It is designed especially for Cabinet and Pattern Shops, Furniture, Chair, and Carriage Factories, and all places where the best work is wanted, it being essentially a high-grade machine.

Its parts are few and simple, its combinations many, and adapted to change without calculation, mistake or delay.

**DIMENSIONS**—Stationary Table 38x19 in. Sliding Table 38x16 in. It carries two 12 in. saws, or will carry one 9 and one 16 in., or one 18 in. saw.

Price, complete, with Countershaft, two 12 in. Saws, and all Gauges, \$211.60. Weight, 1000 lbs.

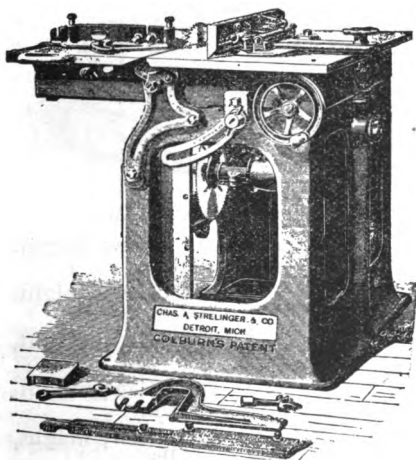


FIG. 4072. UNIVERSAL SAW BENCH

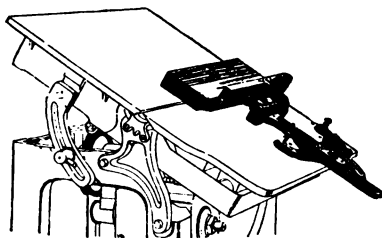


Fig. 4073 shows position of table when set for Ripping Bevels. Table can be tilted to an angle of 45 degrees.

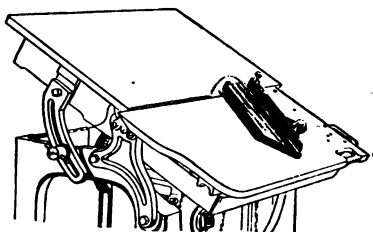


Fig. 4074 shows position for cutting Flaring Angles, such as Carriage Seats, Sides of Trays, etc.

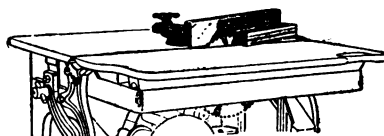


Fig. 4075 shows the manner of hollowing Core Boxes, Staves, Mouldings, etc.

The Splitting Fence is set at an angle to the saw, and the stock is moved diagonally across the same. By varying the angle, wide or narrow curves can be taken. Depth is quickly adjusted by hand wheel.

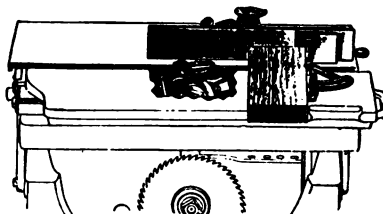


Fig 4076 shows machine with Dado Head

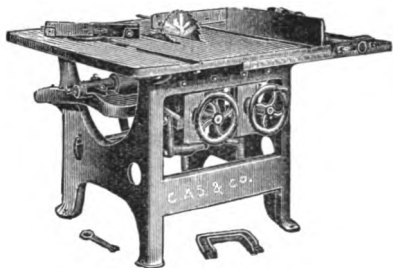


FIG. 4077.

**IMPROVED DOUBLE SAW BENCH.**

The cut shows a newly designed Saw Bench arranged with 2 Arbors for carrying a Cut-off and a Rip Saw at the same time. It is a finely made tool, the workmanship and finish being of the best quality.

The Iron Table is 44x48 in., and has no crosswise slots, the Ripping Gauge being arranged on a way outside of the table. This Gauge is adjustable to a miter, is accurately stopped at both miter and square, and can be set at any intermediate angle. Cut-off Gauges are provided, one of which is adjustable to a miter, and they may be used on either side of the saw. Adjustable Screws are convenient, the shifting of both Arbors being done instantly. Arbors are 1½ in. diam., Collars 4 in. diam. A large Throat Plate admits both saws, and an iron plate fills the opening. One Arbor extends beyond the nut to accommodate Cutter Heads of various kinds.

A Screw Adjustment for end play is provided on the Arbor. Ordinarily Saws of 16 in. diam. are used. A 10 in. Saw projects 2 in. above the table.

Price includes one each, Cross Cut and Rip Saw 16 in. diam., and Counter-shaft. Weight of machine, 1250 lbs.

Price, \$170.00. End Stop Gauges extra, \$6.35.

**NOTE**—If you will take the pains to explain your wants as fully as possible it may save us considerable trouble. You know what you want—or at least what you want to accomplish—we don't, and are poor "guessers."

Another good idea is to—sometimes—inclose a stamped, self-addressed envelope

**WOOD SAWS.**

The machines represented in Figs. 4072 and 4077 are presumably the finest Sawing Machines that are made, embracing all modern improvements, and intended for the most accurate kinds of work that can be done with a saw. It seems like taking a step from "The Sublime to the Ridiculous" when we go from them, and take up the ordinary Wood Saws which are used mainly for rough work, such as sawing fence posts, cord-wood, etc., etc.

The following machines are sold very extensively in country districts; are light but strong, and can be easily moved. Are very often used in connection with windmills. The frame is a combination of iron and wood; the arbor on sizes "A" and "B" is of 1½ in. steel; sizes "B", "C" and "H", 1½ in. steel; sizes "E" and "F", 1½ in. steel. The cut shows styles "G", "H" and "F". Prices include Saw.

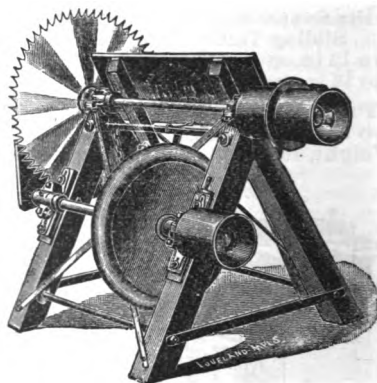


FIG. 4078. WOOD SAW.

Size "A", \$21.10, 20 in. Saw; weight, 150 lbs; Fly wheel, 60 lbs.

Size "G", \$26.00, 22 in. Saw; weight, 155 lbs.; Fly wheel, 60 lbs.

Size "B", \$26.00, 24 in. Saw; weight, 210 lbs.; Fly wheel, 100 lbs.

Size "H", \$33.00, 26 in. Saw; weight, 210 lbs.; Fly wheel, 100 lbs.

Size "E", \$36.00, 28 in. Saw; weight, 370 lbs.; Fly wheel, 140 lbs.

Size "F", \$42.50, 30 in. Saw; weight, 440 lbs.; Fly wheel, 140 lbs.

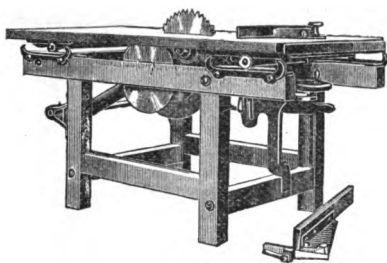


FIG. 4082.

**REVOLVING DOUBLE ARBOR, RIP AND CUT-OFF SAW.**

Two complete machines in one, without change of saws. Bed provided with Tracks and Adjustable Rolls, doing away with friction. Bed can be locked to frame for ripping, and has 5 inch throat removable for plowing, grooving, etc. Frame is of maple with glued-up table. When one saw is in use the other is at rest. Price includes one each, Rip and Cut-off Saws; one each, Slitting, Cross Cut and Miter Gauges, and Countershaft. Weight 760 and 900 lbs.

No.	Price.	Size Table.	Hole in Saw.	Width it will cut.
1	\$100.00	35x60	1 in.	20 in.
3	116.00	37x67	1½"	24 "

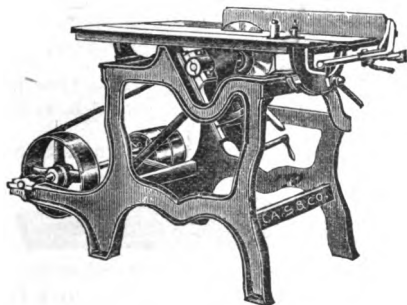


FIG. 4083. COMBINATION SAW WITH TILTING TABLE.

The frame is in one piece; second frame which carries the saw is fitted to this, and slides in grooved ways; table has two grooves running entire length and can be set to any angle up to 45 degrees. Machine is suitable for any size saw up to 14 in. Price includes one each, 14 in. Rip and Cut-off Saw, Slitting, Cross-cut and Miter Gauge.

Price, \$112.50, weight, 660 lbs.

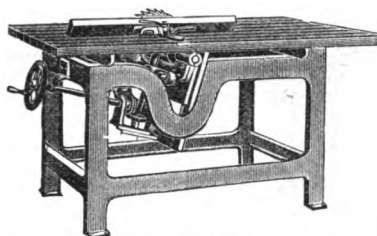


FIG. 4084. IRON FRAME SAW TABLE.

This machine will carry saws from 12 to 20 inches in diam., and is intended for a great variety of work. Bed is 38x54 in., 1½ thick, made of narrow strips glued together. Price includes Countershaft, one 16 in. Saw, and Patent Combination Gauge.

Price \$112.50; weight, 800 lbs.

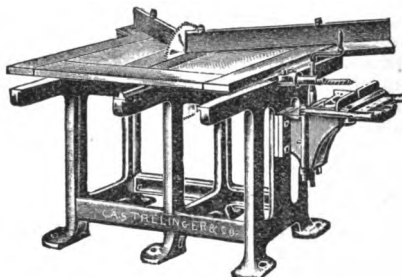


FIG. 4085. MITER CUT-OFF SAW.

This machine is used largely by Furniture and Picture Frame manufacturers. The table is 44x48 in., made of glued-up maple, is placed upon large rollers, and has a V slide in the middle, giving a good support for the material and securing alignment. The Gauges and Extension are extra long, and form a perfect right angle with each other.

The Boring Attachment will be found very convenient for horizontal boring of all kinds. Is raised and lowered by a screw, and provided with stop to regulate depth of hole. We furnish with machine one 20 in. Cross-cut Saw, and one Machine Bit.

Price, with Boring Attachment, complete, \$135.00; without Boring Attachment, \$115.00; Countershaft, if desired, \$18.00, weight, 950 lbs.

THIS BOOK is copyrighted and we caution all parties against using, without our written permission, any of the original matter contained herein.

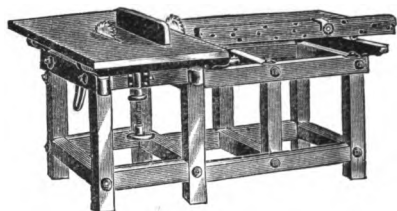


FIG. 4086.

**COMBINATION RIP AND CUT-OFF SAW.**

The frame of this machine is made of hardwood, tenoned and bolted together, and finished with several coats of shellac varnish. The saw mandrel carries 2 saws, and has Automatic Expansion device, to take up difference in various diameters of sawholes. Tables are made of glued-up strips of hardwood; Rip Saw table is 28 in. wide by 60 in. long, and is hinged to the back part of frame, and is provided with a Hand Wheel and Screw for adjusting it for different thicknesses of lumber. Cut-off Saw table is 24x48 in., is mounted on rollers and V slide, has fence with Adjustable Stop Gauge, regulating length of stock to be sawed. Price includes Rip and Cross-cut Saw, 14 in., and Countershaft. Price, \$87.50; weight, 800 lbs.

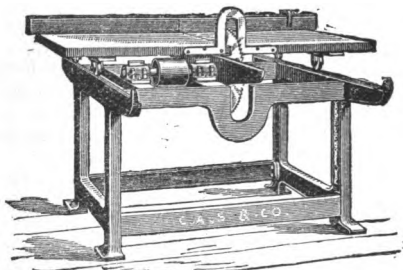


FIG. 4087. IRON FRAME CUT-OFF SAW

This is a rigid, substantial machine; frame is of iron, covering almost as much floor space as the size of table. Table is of hardwood, glued up. The fence extends full width of table, and has a Dovetailed Iron Strip on top, in which the adjustable stop slides for cutting different lengths. Fence can be extended beyond table for cutting long stuff if desired. The rollers travel on the tracks planed on top of the frame. Under the center of table is a grooved guide plate, which keeps table in line

with the saw. Price, with 16 in. Saw, and Counter, \$98.00; weight, 700 lbs.

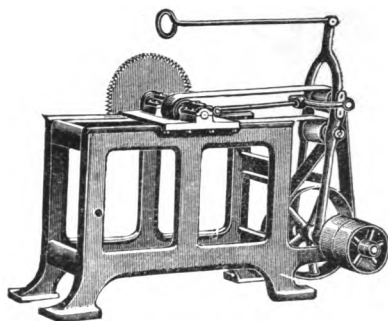


FIG. 4088.

**NO. 1 RAILWAY CUT-OFF SAW.**

This machine will be found useful for general cross-cutting in Sash, Door, Box, Furniture and other shops. Carriage works backward and forward on dovetail slide. Mandrel will carry a saw up to 20 in. diam., and is provided with Patent Expansion device suitable for various sizes of saw holes. The table is usually constructed by the purchaser. We provide a Wrought Iron Rest for holding one end of table.

Price, including one 16 in. Saw, \$82.50; weight, 700 lbs.

**NO. 2 RAILWAY CUT-OFF SAW.**

This machine is of the same type as the foregoing, but is somewhat heavier and stronger.

Price, including one 20 inch Saw, \$100.00; weight, 850 lbs.



FIG. 4089. V CROSS CUT SLIDES.

Can furnish any length up to 5 ft. Usually sell the Top Slide in lengths of from 1 to 2 ft., the Bottom or Male Slide, any length up to 5 ft.

Price, per ft., \$0.75.



FIG. 4090. IMPROVED ROLLER SLIDES.

Set includes 2 tracks 4 ft. 6 in. long, and 2 Frames with Rollers as per cut.

Price, per Set, \$12.00.

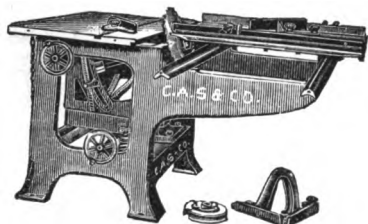


FIG. 4091. COMBINATION BENCH SAW.

This is a heavy, strong machine; is used largely in Furniture and Carriage factories, Moulding and Planing mills, for cutting miters and all kinds of bevels. Is well adapted for Ripping, Cross-cutting and Dadoing. As will be seen in cut, the Saw can be raised, lowered and set to any angle up to 45 degrees. Machine is provided with all necessary guides for Ripping, Cross-cutting and Mitering.

Price, \$170.00; weight, 1400 lbs.

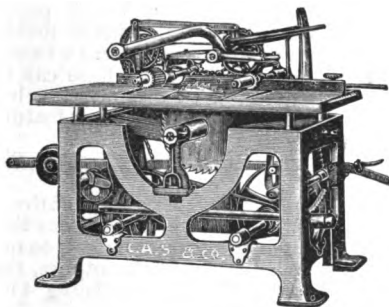


FIG. 4092.

PATENT SELF-FEED RIP SAW.  
(Front View.)

There are, we regret to say, a great many more Self-Feed Rip Sawing machines on the market than there are *good* ones. Until within a year or two there have been but very few changes made in the way of improvement. This machine is of new design, and has become very popular within the last year among the mill and lumber men, and we think that in all points it will be found extremely satisfactory.

This machine has Square Raising Table operated by right and left worm wheels and screws, which can be raised 6 inches. The Saw Mandrel is of  $1\frac{1}{2}$  in. steel, and runs in two 6 in. and two 4 in. boxes. Mandrel between saw collars,

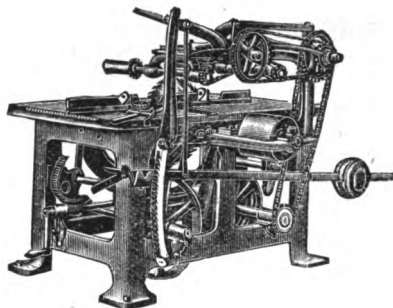


FIG. 4093.

PATENT SELF-FEED RIP SAW.  
(Rear View.)

$1\frac{1}{2}$  in. diam. by  $8\frac{1}{2}$  in. long, this space being filled with collars of different thicknesses, allowing a gang of saws to be used for different widths of stock. Machine will rip stock 6 in. thick, and by placing saw on outer end of mandrel will take in stock 18 in. between fence and saw. Has two feed shafts; one in front and one in rear of saw. Rear feed shaft has corrugated roll  $5\frac{1}{2}$  in. long (can furnish hard rubber roll for plain stock at extra cost). Feed is driven from saw mandrel by 2 inch and  $2\frac{1}{2}$  inch belts and sprocket chain, and can be stopped by a clutch while machine is in motion.

Machine has four rates of speed; 35, 75, 100 and 130 lineal ft. per minute. Can furnish Re-Saw Attachment for making beveled siding when desired without extra cost.

Price, complete with Countershaft, \$185.00; weight, complete, 1800 lbs.

FIG. 4094. RIGID SAW GAUGE.  
Price, \$4 25, including 2 ft. of Slide.FIG. 4095. SWIVEL SAW GAUGE.  
Price, \$5.50, including 2 ft. of Slide.

## SWING SAWS.

The Swing or Slash Saw is used in Sash and Door Factories, Planing Mills, Box Factories, in fact for all mills where lumber is to be cut into equal lengths with square ends. The demand for these Saws is constantly growing, and the sale is probably five to one of what it was five years ago.

All three machines shown here are arranged with Counterbalance, so constructed that the Saw is handled with ease. Prices do not include Saws.

No. 1 Swing Saw, \$45.00, 6 ft. 8 in. over all; weight, 500 lbs.

No. 2 Swing Saw, \$48.00, 7 ft. 8 in. over all; weight, 550 lbs.

These machines will take any Saw up to 18 in. diam. Countershaft is so constructed as to permit an adjustment of 4 inches.

Can furnish same machine to go on ceiling if desired; prices are the same.

No. 3 Swing Saw, \$47.00, 7 ft. over all; weight, 500 lbs.

No. 4 Swing Saw, \$50.00, 8 ft. over all; weight, 550 lbs.

These machines take Saw up to 18 in



FIG. 4096.  
NOS. 1 AND 2  
SWING SAW.

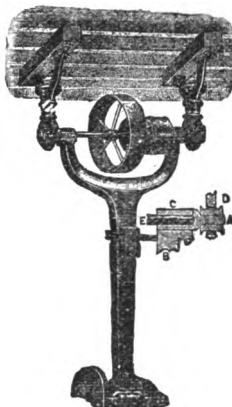


FIG. 4097.  
NOS. 3 AND 4  
SWING SAW.



FIG. 4098  
NO. 5 SWING SAW.

diam. The Swing Frame is sustained by bearings in hanger boxes entirely independent of the revolving parts. Hanger boxes are pivoted, and by means of hand wheel and screw can be raised or lowered 4 in. This machine can be used bolted to a wall or uprights, but when this is done, the adjusting feature is lost.

No 5 Swing Saw, \$45.00; weight, 350 lbs.

This machine is made almost entirely of heavy tubing. In some sections this style of Saw is preferred, but we do not consider it as good as the others, the only advantageous feature being the lightness. Is suitable for any size Saw up to 20 in. diam., and is furnished in any length from 6 to 9 ft

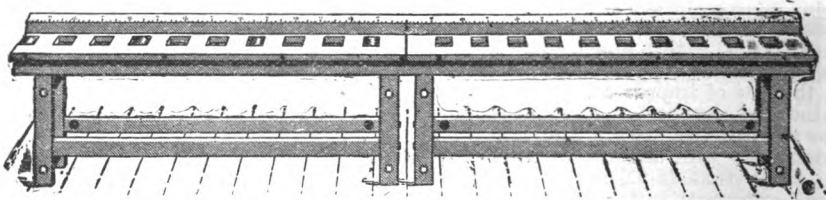


FIG 4099. SWING CUT-OFF SAW TABLE

These Tables are either 12 or 14 ft. long as preferred, with 14 in. Bed, and are 30 in. high. Are made of hard maple thoroughly kiln-dried, top and

frame being securely joint-bolted together. A Roller is inserted in every other opening; Scale Board is plainly marked. Price, \$27.00.

are continued on page 905



## A FEW LEAVES FROM THE BOOK OF OUR EXPERIENCE.

**AUTHOR'S NOTE.**—We have reserved a few pages here for answering in a general way, many inquiries we are likely to get. The Texts for these "Sermonettes" have in nearly all cases been furnished by our correspondents, and the answers are—for the most part—such as have been embodied in letters to these correspondents. Many of the questions treated are matters of every-day occurrence, and in printing them we feel that it may be the means of saving considerable labor of correspondence to ourselves, as well as others. Besides, we can go into the subjects more fully than the limits of ordinary letter-writing allow. To explain further, we would say that these letters in almost all cases refer to articles shown in former catalogues. In treating questions of an unpleasant nature, we have refrained from printing the names of our correspondents. Otherwise the names and addresses are given in full.

### WANTS HIS MEN TO HAVE GOOD TOOLS.

Enclosed find stamps for your latest catalogue of wood-working tools.

I really want this catalogue for the use of my men, that they may see and be induced to use only the latest and best tools that can be obtained.

EDWARD OVERMAN,  
Portsmouth, Va.

From the letter head we ascertain that Mr. Overman is a General Contractor and Builder. As a rule, contractors and builders figure on getting a certain amount for a completed job, and it strikes us that it is decidedly to the interest of every employer to see that his men are supplied with tools suitable for doing the best work in the least amount of time.

On page 817, the article "Your Own Tools", treats this question from the mechanic's point of view.

### TORN CATALOGUES.

Please give me the best price on Steel Dowel Pins (Fig. 1601, page 452 of your catalogue). Your prompt attention will oblige,  
D. G. W., ———, Ont.

This gentleman's request was reasonable and perfectly plain, but for fear

that we were as stupid and thick-headed as himself, he tore out the leaf containing the illustration and prices, which practically spoiled two pages, containing Expansion Bolts, Brass and Iron Turn Buckles, Brass Clamps, Escutcheon Pins, Wire Staples, Corrugated Steel Fasteners and Brass Gongs, besides the article asked for.

To be sure, the book was his and he had a right to do with it as he chose. But ———.

### HARDLY FAIR TO US.

Your "Book of Tools" received some time ago. I find it very useful, and while it may be treating you unjustly, I have been using it as a guide to keep our local dealers from charging outrageous prices. You have many useful tools that cannot be obtained in this city, which I think I will be able to buy from you.

J. T. DAVIS, Pittsburgh, Pa.

We are glad to see that you appreciate the fact that it is hardly fair to us to use our catalogue in the way you describe, but human nature is very much alike all the world over, and we will feel properly grateful for orders for such goods as you cannot obtain at home.

## JUST AS GOOD.

I have examined your catalogue with much interest, and am reminded that the many little annoyances such as you refer to may be found on the side of the buyer as well as the dealer. Recently, I ordered from a Minneapolis concern a No. 22 Bailey plane; the tool which they sent me was not a *genuine* Bailey, but one of a kind known to the trade, I think, as a Bailey *pattern* plane. The adjustment screw and lever did not operate satisfactorily, and I submitted it to a practical mechanic who has used the Bailey plane. After a trial of three-quarters of an hour he said he could "Do nothing with it". I requested the dealer to exchange it, either on the ground that it was not what I ordered, or because it was defective, and in reply he offered to settle the matter by allowing me 25 cents on a future order.

A. E. LORING,  
Lake Park, Minn.

Without going into the further details of this letter, or our reply to Mr. Loring, would simply say that a question of this kind could not come up in connection with our customers and ourselves, for two reasons:

In the first place, when a customer orders Bailey planes of us he gets the *genuine* Bailey plane made by the Stanley Rule & Level Co., because we don't sell any other. We can buy others that look almost like the genuine, at from 10 to 20 per cent less, but as a rule they are not worth as much within 50 per cent, and there is no economy for the consumer in buying them.

For the second reason, read "OUR GUARANTEE", page 613.

## THEY LIKE TO USE MINE.

Some of the boys think your prices on tools high, but I discover that they always lay their tools down and use mine when an opportunity offers.

G. M. SLAUGHTER,  
Wharton, Tex.

## WHY NOT THROW IN A HOUSE AND LOT?

I find your "Book of Tools" a very fine thing, but think lists and tables showing strength and weight per foot of wire, sheet metals, tubing, iron beams and rails, and the list prices, etc., on different articles of this kind, would be a fine addition. Kent's Hand Book gives much that you could use, and it wouldn't cost much more to get it up, and would make it a very valuable book.

F. W. SWIFT, Marietta, N. Y.

This gentleman's suggestions are like his name—a little too "Swift" for us, but if his ideas and the ideas of many others like him were to be followed out, we would have a book as large as the Century Encyclopedia.

Why not put in recipes for making Soft Soap or Soothing Syrup, or the latest rules for playing Croquet, etc.

Nonsense aside, it would cost us thousands of dollars to follow out these suggestions. In the first place, Kent's Hand Book—which is the best thing of the kind now published—is copyrighted, and if we used the matter, we would naturally expect to pay Mr. Kent a reasonable compensation. In the second place, Kent's Hand Book sells for \$5.00. Our catalogues, which are, *in their line*, just as valuable as Kent's (and to many far more valuable), sell for 25 cents, which does not cover the cost of the paper, printing and binding.

If we were in the book-selling business, we wouldn't think of charging less than \$2.00 for either "A Book of Tools" or "Wood Workers' Tools".

We are manufacturers of, and dealers in, Tools, Machinery and Supplies. Our purpose in issuing these two books is to promote our business and increase our sales in the various lines represented. Whatever value the books may have as works of instruction, we are glad of.

Our reasons for charging the small sum that we do for these books, are, first, that the 25 cents each goes quite a way towards paying the cost, which is very acceptable, and second, if the books were offered free, we would receive hundreds of applications every day from persons who would send for them out of sheer curiosity, and from whom we never could hope to receive any return in the way of business.

### JUST A CLUMSY LIAR.

Prices quoted in your catalogue are from 50 to 100 per cent higher for same class of tools as are quoted by other houses.

R. T. T——,  
Vinton, Iowa.

We don't know this gentleman, but in writing the above he sets himself down as being a clumsy liar. We do not deny that an occasional price of ours may be higher than some one else might ask, but 50 to 100 per cent is simply ridiculous, if, as he states, the goods are of the same class.

### COMPLIMENTARY BUT IMPOS- SIBLE.

Received your catalogue in due time. Am pleased to tell you that the prices in catalogue are *125 per cent lower* than I can buy the same goods here for, and you can count on me as a customer as long as you want to have me.

W. H. ROUSE,  
Douglas, Wyo.

This letter presents a strong contrast to the one which precedes it, although Mr. Rouse hardly flatters our business judgment in stating that our prices are so much lower than others. Mr. Rouse is also "way off" on his arithmetic. A price can be 125 per cent more than

another, but 125 per cent *less* would indicate that we were giving the goods away, and 25 per cent of their value as an extra inducement.

### CAN'T FURNISH THEM.

Please give me price on the following articles:

One set Buck Bros' Shank Firmer chisels with beveled edge,  
One 5½ in. Barton's Hand Axe,  
One Peace 26 in. Hand Saw No. P68,  
One 10 in. Backus Ratchet Brace,  
One 1 in. Hartford Nail Hammer,  
One No. 100 Sargent Steel Square,  
One 10 in. Noble's Coach Knife,  
Etc., Etc.

JOHN HANSCOMB,  
Syracuse, N. Y.

We don't keep Buck Bros'. chisels. Ward chisels cost a little more, but they are better, we think. In fact, we do not carry any of the above brands of tools. Hartford hammers were never of much account, Backus braces have been out of the market for some time, Peace makes as good saws as any one, but so does Disston, and Richardson, and Jennings, and Bishop, and we can't keep them all. The tools you specify are good (with the exception noted), your request is reasonable, and we are constantly in receipt of similar ones.

We would like to accommodate you, but can't. We carry an average stock of three thousand dozen chisels and gouges. If we catered to every one's likes or whims as regards brands, we would have to carry twenty thousand dozen, and if the same course were pursued in all of our lines, we would soon land either in the bankruptcy court or the poorhouse—both—likely.

The tools we show in catalogue are equal to any, and the best that we can make or procure.

If you must have other makes, we will have to refer you elsewhere.

## IS HE, OR IS HE NOT?

Although the incident referred to here is a minor one, at first sight appearing to be a simple matter of complaint, the principles covered—and suggested—by it are very important.

Two weeks ago an Agent came into my shop with some samples of tools, and I gave him an order for a 2½ inch Boiler Expander. He had a price list where the price was printed at \$16.00 or \$18.00, and the discount was 20 or 30 per cent, I forget which. But any way, I paid him \$12.80 cash for it. When I was looking at it yesterday, I saw your firm's name stamped on it. I have one of your catalogues, and when I looked at the price, I saw that you only asked \$5.60 for the same Expander. I was going to buy a good sized bill of tools this Fall when I repair my mill, but I don't want to be taken for a sucker, and won't buy any goods from a firm that allows these kind of games to be played.

J. H. C., — City, Iowa.

While we regret this gentleman's unfortunate experience, we are unable to see how any responsibility for this transaction rests upon us. Mr. C. says that he "Don't want to be taken for a sucker", and, while we sympathize with him in this negative desire, we must candidly admit that he seems to have some of the symptoms. He states that he has one of our catalogues; if he had taken the small amount of pains necessary to look up the price of Expanders *before* buying of the agent, instead of *after*, he would have been about \$7.00 in pocket.

We have no agents, and we do not gain from the above letter that the party selling this tool represented himself as such. We sell tools to any one who pays for them, and when paid for they are no longer ours, nor have we any control over the buyer's action, so that if he chooses to sell them at one-half of what he paid, or four times the

price, we are—in either case—free from any responsibility.

And this sets us to thinking—Why is it that so many people will place more confidence in peripatetic hucksters calling themselves "Agents"—in most cases total strangers—than in reliable business houses, whose commercial standing can almost always be quite easily ascertained?

## USE YOUR HEAD AS WELL AS YOUR HANDS.

To follow out the line of thought suggested by the foregoing article—Why is it that shop owners and tool users, generally, spend so little time in studying catalogues and trade literature? Within the past ten or fifteen years there have been brought out more labor-saving devices and machines than for any fifty years previous. Trade catalogues now-a-days are full of suggestions that are helpful, and a manufacturer will surely find it difficult to "Keep in the procession" unless he constantly refers to these aids.

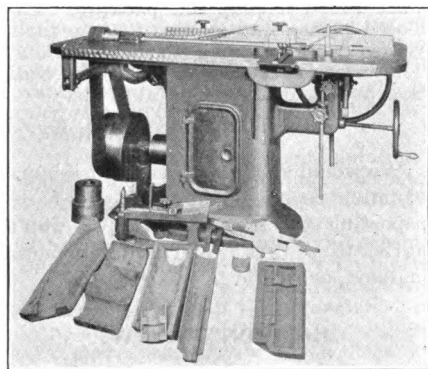
The old adage, "It isn't what a man Makes, but what he Saves that makes him rich", is just as true to-day as ever, and the manufacturer who would be successful must be constantly on the lookout for Tools, Machines and Devices that will save time, and enable him to compete with others in his line.

About six months ago Mr. Chas. Lewis, of the L. & A. Spring Co., Jackson, Mich., was at our place, and while looking about the store, came across a Universal clamp drill, such as is shown in Fig. 422 of our Metal Workers' Tool Catalogue "A Book of Tools". He saw that it could be used to good advantage on many occasions in and about their plant, and bought one. Last week Mr. L. called upon us, and during a conver-

sation said that it was one of the most useful tools about the shop, and that it had "paid for itself twice over" in the short time they had used it. Mr. Lewis has had our catalogue nearly two years, yet it is more than likely, that had he not seen the tool at our store, he never would have ordered it.

If a device like the Inserted Tooth Feed Roll (pages 954 and 955) will increase the output of a machine from 10 to 50 per cent (and in many cases it certainly will), it is the best kind of economy to lay out money for such an article—if you have the money to lay out.

Another example is offered in the Core Box Machine, which we illustrate



here. This is used in the construction of Patterns, Core Boxes, Pulley Bushings, etc., etc. It will groove a semi-circular Core Box (either straight or arched) perfectly true in a few minutes, where hours—and sometimes even days—are required to do the same work by hand. Will cut from  $\frac{1}{4}$  to 20 inch diam., any length, with, across or on the end grain. Will form internal circle work on outside of patterns, making coves, or cut inside of round boss to fit exterior of pattern.

Our list price on this machine is \$194.50. Weight, 1100 lbs.

There are hundreds of shops where this machine would pay for itself in less than a year's time, with the amount of money saved over the cost of hand work. On the other hand, we frankly admit that unless a shop owner has considerable use for such a machine, it would be unwise economy to purchase it.

In conclusion, we would earnestly call the attention of our readers to the many articles—new and old—in this catalogue designed for the purpose of doing work well and at the least expense in labor cost.

### WHO PAYS THE BILLS?

We are in the market for a Hand Planer, Saw Table, Boring Machine and Power Grindstone. Please state full particulars and dimensions, together with best cash price. Do not send any agents, as we cannot meet or spend the time with them. Give full details by mail.

THE DOW CHEMICAL Co.,  
Midland, Mich.

We note with interest your instructions in regard to not sending an agent. We don't send agents; it's expensive, and some one has to pay the expense, sometimes the manufacturer, but in the long run, we think, the consumer. The other day an order for machinery was given out in a small town in Ohio; the order amounted to \$1,661.45. We are credibly informed that agents of fourteen different concerns went to this place to try and secure the order. The railroad, hotel and wage expense of these fourteen agents must have been at least \$300.00—perhaps even twice this amount. Who paid the bills? We didn't pay any part of them. Who got the order? Modesty forbids.

## LITTLE IMPROVEMENTS.

I have one of your three foot flexible folding rules. It is the handiest tool I have ever used, but if the maker put brass tips on the end it would be a great improvement, and would make it wear twice as long.

F. B. COOK, Dayton, Ohio.

We suggested this improvement to the manufacturers; they approved of the suggestion, and now all of the flexible rules we get are made with brass tips, although the cut on page 757 doesn't show them. The extra expense is almost nothing, and it really makes the rule worth twice as much.

## IT IS THERE JUST THE SAME.

Can you put me on the track of a first-class machine for grinding hair clippers?

I do not find it in your metal workers' catalogue "A Book of Tools", and it makes me wonder if such a thing is made when you haven't got it catalogued.

HARRY L. CAMBLIN,  
New Castle, Pa.

This is a clever compliment for "A Book of Tools". The letter head, which

**HARRY L. CAMBLIN.**

THE FIXER

REPAIRS

BICYCLES, GUNS, REVOLVERS, UMBRELLAS

OR "ANY OLD THING EXCEPT THE BREAK-OF-DAVE  
OR A BROKEN HEART."

WHILE AND SCISSOR GRINDING  
ELECTRICAL SUPPLIES

21 SOUTH JEFFERSON STREET

NEW CASTLE PA Nov 18 1896

we reproduce, indicates Mr. C. to be somewhat of a joker. The machine that he inquired about is in the catalogue (Fig. 895, page 254), but we call it a Surface Grinder, and, while the best machine for grinding Clippers, it is used for so many different purposes that we did not think to specify it as being a Clipper Grinder.

Many of the machines shown in this catalogue can be used for other purposes than those specified. For example, the Broom Handle Lathe, on page 858, is especially intended for broom handles, but there is no reason why one could not use it for Brush, or any Handles that are very similar to a broom handle. Throughout this catalogue will be found many machines and tools that can be used as they are or—with some slight changes—for different purposes than for which they were originally intended.

## GOODS SHORT.

In cleaning up the shop this morning, the tools that I wrote you did not come were found among the packing. Enclosed please find stamps for the tools you so generously sent to replace them. They were three Auger Files, two Nail Sets and three Drills; total 97 cts.

T. T. TEMPLIN, Paris, Ky.

We would suggest that our customers examine packages thoroughly before reporting shortage, because we won't agree to always replace shortages claimed, as we did in this case.

## HE DIDN'T KNOW.

Please send me a 22 inch 10 point Panel Saw. I hope you have not quit making them. Be sure and send your own brand of Saws. I have three of them, and like them very much better than the Disston; in fact, I am more than pleased with all the tools I have had from you.

E. D. COULTAS,  
Quaker City, Ohio.

The Saws this gentleman refers to were bought before we adopted the plan of putting the maker's name, as well as our own, on our Special Brand Saws, and they were all made by H. Disston & Sons. "Where Ignorance is Bliss, 'tis Folly to be (other) Wise."

## NO TROUBLE WHATEVER.

We print here extracts from six letters received within a day or two:

"We understand that there is a machine made for making white wood Bungs, with a capacity of 100,000 per day. Can you inform us who makes such a machine? Sorry to trouble you, but were told that you would know if any one. Thanking you in advance for the information, etc."

"I am thinking of starting to make Corn Cob Pipes, and will need some machines. Can you tell me where I can get them?"

"Will you please send me catalogue and prices on Fire Brigade and Extension Ladders and other Appliances, and also of the best Steam Road Rollers and Horse Sweepers."

"A client of ours is inquiring for information about styles and prices of machinery for making Macaroni. He wants a complete plant. Would you be good enough to furnish us with full particulars."

"It has become quite common in our office, when a perplexing question comes up in regard to Tools or Machinery, to write 'Chas. A. Strelinger & Co.,' although we fear that up to the present time our purchases have by no means repaid you for the considerable amount of information you have furnished us from time to time.

A correspondent in South America desires a line of Machinery for making Bricks and Tiling. Will you kindly refer us to some good manufacturer of this class of machinery?"

"Please give me information of prices, weights, etc., for machinery complete for starting a 'Chewing Tobacco' manufactory, with a capacity of 200 lbs. per day; also all written information, such as formula for preparing the juice in which the tobacco must go before pressing. I will command the machinery as soon as I get your information."

The first four inquiries are quite in our line, as we are able to supply these machines. The fifth refers to a line of machinery that we do not handle, but we are quite well posted as to the differ-

ent manufacturers, and so we are enabled to put the inquirer on the right track. The sixth presents a rather difficult problem. We can furnish outfits of Machinery for manufacturing tobacco, but the formulas for preparing and flavoring are trade secrets, and hard to obtain.

Answering inquiries of this nature is part of our business.

## THIS MAKES US WEARY.

Please send to the undersigned full particulars in regard to Engines and Boilers, Gas Furnaces, Punches and Shears, Lubricating Oils, Rawhide Gears, and Rope Transmission.

H. W. D. —, Chatham, Ont.

Just a little postal card, and yet it calls for enough information to keep us busy for a month, if we undertook to furnish "full particulars".

As stated in previous article, we are glad to answer inquiries, but this is too much.

This gentleman asks a great deal, and does not give us a single detail to work on. We are entirely in the dark as to whether he wants a punch to make an  $\frac{1}{4}$  in. hole in sheet tin, or one that will punch a 2 inch hole in 2 inch steel.

We handle 16 different styles of Steam Engines, from 2 H. P. to 500 H. P. Shall we give him "Full particulars" about *all* of these?

Rope Transmission and Gas Furnaces are also very broad subjects.

Such letters as this make us very, very tired. We cannot agree to handle "Glittering Generalities". We must have a certain amount of detailed information, and, while we do not always expect our customers to be able to decide just what is the best machine or article for their purposes, they had ought to know somewhere within "A row of apple trees".

## HORSE POWER REQUIRED

At one time we considered seriously the question of stating the H. P. required for each of the different machines in our catalogue, but finally came to the conclusion that it would be inexpedient—the power used in running machines varies so greatly with the different conditions under which they are used. For example, take the Improved Double Saw Bench (Fig. 4067). For a great deal of work done about the pattern shop, the Saws being in the best condition, working on soft, clean woods, one H. P. would suffice to run this machine. Under opposite conditions, i. e. hard, tough, or green, sappy wood, saws poorly filed and out of round, it might take three H. P. to run the machine.

We will, upon application, give information regarding the average H. P. required for any machines we handle.

## CAPACITIES OF MACHINES.

In many cases this question, like the one which precedes it, depends largely upon the conditions surrounding the work. In some instances we have printed the average capacity in connection with the machine, and have endeavored to avoid "Inflating". For example, we state that the Hoop Coiler (Fig. 5167) has a capacity of from 15,000 to 18,000 hoops per day. One of our customers tells us that his men have repeatedly coiled 72,000 hoops in a day with three of these machines. Notwithstanding, it would not be wise to print the capacity of the machine at 24,000, as we are satisfied this is beyond an *average* production.

## COMPLETE DESCRIPTIONS.

We are making a patented article in brass, and think that we could use a

machine like the Valve Milling Machine (Fig. 819). Will you furnish us full particulars in regard to this machine, as the catalogue description is very meagre.

THEO. E. FELTON & SON,  
Newark, N. J.

We cannot agree with these people in regard to our catalogue description of this machine being "meagre". Have gone over it carefully, and we do not know what we could add to make it more complete, excepting to state the speed at which machine should run, and this is a detail that is not necessary until after the party has bought the machine.

This subject is taken up to discuss briefly the matter of Catalogue Descriptions. While for some reasons we wish we might be able to describe minutely every feature about everything we sell, there are limitations, and to suit every one in this respect, this catalogue would have to be swelled to inconvenient proportions.

We think our readers had ought to be grateful to us for sparing them, in regard to our not printing the dreary, monotonous "blatherskite" which abounds so freely in manufacturers' catalogues. As an example we have before us a four page circular descriptive of a Combination Machine, or Universal Wood Worker, similar to the machine shown in Fig. 5197. This circular contains four pages 5x8 (160 square inches) of printed matter. Our description covers less than 11 square inches, and yet we cannot see that they impart one particle more information than we

For instance, here is our description of Boring Attachment:

"The Boring Apparatus is simple, Table can be operated easily, has Adjustable Gauge for Angle Boring, and suitable Stops and Gauges".



Here is the other :

"The Boring Attachment is a desirable feature of this machine, and one which will no doubt commend itself to the user of Wood Working Machinery. It is built of the best iron and steel, is strong, heavy and substantial, and possesses all of the essential and requisite features that are usually found in the high priced, Independent Horizontal Boring Machines.

By reason of the Independent Adjustment, which is operated by means of a Crank, the Table can be raised and lowered and moved backward and forward with the greatest ease.

In this Attachment the work is not slighted in any particular, as none of the Slide Bearings are Babbitted to lessen the cost, as is so often the case with many machines of this character. But instead of this they are all Planed Accurately, and by reason of the work being of such a superior order, the operator is enabled to do true work.

It is also supplied with an Adjustable Gauge for Angle Boring, and all necessary Stops and Gauges for spacing the work.

Shaft is made of the finest quality Machinery Steel, turned straight and true, and fitted in Boxes that are in alignment and absolutely correct; in fact it has advantages that make it superior to other Boring Attachments, and if the reader has carefully followed the above description, we think he will be thoroughly and satisfactorily convinced of this".

We think that the reader will agree with us that their description furnishes no more information than ours. We cannot see the necessity for iterating and reiterating "Best quality Iron and Steel", "Shafts of Steel", "Shafts in Alignment", "Best Babbitt Metal", "Machines carefully inspected", "Tables are planed", "Holes reamed to size", "Bearings scraped to fit", etc., etc. And the worst of it is that, usually, the makers who have the most to say about these things, are the ones whose product is the poorest and least desirable.

## WHAT IS THE DIFFERENCE?

Expecting to buy a Hand Lathe along with some other tools this Fall, I write to ask you what is the difference between Figs. 783 and 785? I notice that one is \$10.00 higher in price than the other, and the sizes are just alike.

M. T. HENSHAW, Atlanta, Ga.

We thought that the catalogue description of these two lathes conveyed quite plainly the difference. The higher priced lathe weighs 20 per cent more than the other, the Head Spindle is of crucible steel, and the workmanship throughout is somewhat superior.

In going over this catalogue, some of our readers may be impelled to ask similar questions to the above, in regard to some of the machines shown.

The fact of one machine being lower in price than another by no means indicates that the machine itself is poor in quality (for there are no inferior goods displayed in this catalogue), but that the other is better.

In the case of some machines, the question of combinations and attachments enters. Take in this book for example—Fig. 4061 is somewhat lower in price than Fig. 4057, and is as good a machine in every particular as the other. But the other can be furnished with Scroll Saw and Moulding Attachments, which in many cases add to its value as a general jobbing machine, and it is these features that impel us to illustrate and describe the latter.

Broadly Speaking—In all cases where two or more machines of the same general description are shown in catalogue, the higher priced one is the better in some particulars, or possesses some features that the others do not.

Broadly speaking again—We wish to say that no machines or tools have been put in this book for the fun of it, for the purpose of "padding", or for displaying any superabundance of knowledge.

## IMPROVEMENTS.

We have a Wood Trimming machine purchased of your firm nearly ten years ago. It has done us good service, and is still in fair condition. We want another, and would like to know what you have to offer us in this line, as we presume there have been some improvements.

S. C. HAYES & Co.,  
New York City.

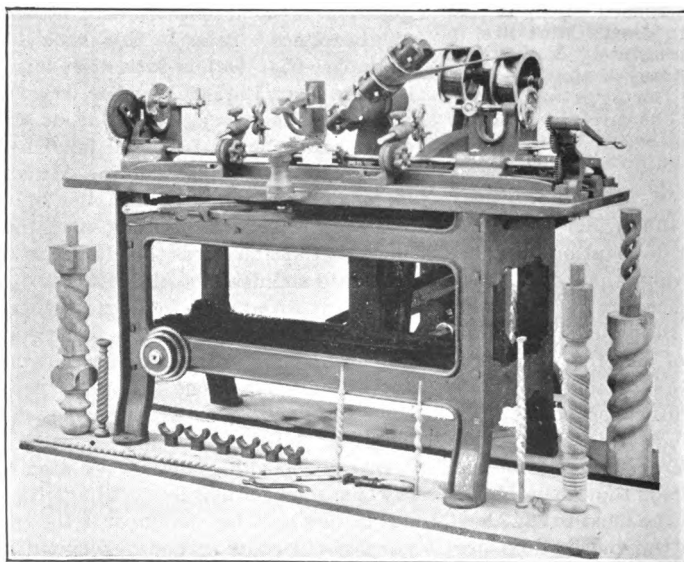
These people are right in assuming that there have been improvements in Universal Trimmers since they bought, although at that time the machine sold them was considered as being superior to any which preceded it, but our present Universal Trimming Machine (shown and described on pages 752 and 753) is just as far in advance of it, as can be well imagined. In fact, we are constrained to believe that we have about reached the height of perfection in a Trimming Machine, and it is quite unlikely that improvements of any im-

portance will ever be made on *this type* of machine.

It doesn't always take ten years to bring about radical improvements. In many kinds of machines there have been very few improvements within as long a period even as ten years, whilst in others the improvements have been revolutionary. For example, when we printed page 861 of this catalogue less than four months ago, we were convinced that the Twist Machine (Fig. 3989) was the best machine in the market for this class of work. The ink was hardly dry on this page, when our attention was called to a new machine that had been brought out during the past few months, and intended for the same class of work. The makers of this machine claim that it will do more work than the other, will do smoother and better work, will do work that cannot be done on any other (for example, the double or open twist shown in right-hand side of cut), and that the gauges

and feeds are simpler and much more easily handled. We visited two furniture factories in which these machines were in use, and the manufacturers' claims were substantiated by the operators at both factories.

Prices are almost alike, and so we have concluded to take up this machine in place of the other.



NEW TWIST MACHINE.

## THIS IS FOOLISH.

Until recently I have been buying the ——— Co's Emery Wheels, but your Emery Wheels discount them by 90 and 90 and 90 per cent To be honest, the man who pays the freight on emery wheels made by the ——— Co. wastes his money very foolishly, if he knows where he can buy *any* other kind. I know whereof I speak.

———, Petersburg, Va.

This gentleman is very positive, but just the same, his statement is foolish. We believe that we are in a position to know a great deal more about Emery Wheels than he. The ——— Co. have been competitors of ours for many years, and they know how to make good Emery Wheels. It is altogether likely that he has been unfortunate enough to get wheels from them that were absolutely unsuited for his work. We have no doubt but that, if he had stated the circumstances to the ——— Co., they would furnish wheels suitable for his work.

## NOT THE ONLY GOOD.

"We are about to purchase a 24 inch Double Surface Planer. What have you to offer? Our foreman says that the S. A. Woods Co. make the only good Planers in the market. Please make us prices on these and others.

F. C. ——— & Co., Beloit, Wis

This foreman must be a partisan worth having. We are certain that S. A. Woods & Co. themselves would not care to make so broad a statement. They might say their Planers were first-class machines—which is the case, they might say their Planers were the *best*—which is not the case, but they certainly would not affirm that theirs were the *only* good Planers.

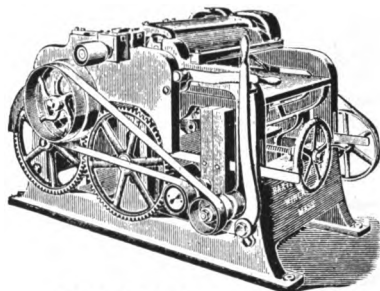
There are many first-class Planers in the market: J. A. Fay & Co., Witherby, Rugg & Richardson, C. B. Rogers, Frank H. Clement, Bentel & Marge-

dant, John A. White, and three or four others make first-class Planers (to say nothing of the Planers which we catalogue), and we believe that one who buys any of the foregoing will have little to regret.

These manufacturers are reputable business men. Their money is invested in shops and tools, and it would be indeed strange to suppose that they have been making Planers for twenty or thirty years and have not yet learned to make good ones.

And Baxter D. Whitney—we haven't forgotten him. Here is a Whitney "Ad." taken from the American Mach-

## Planer Talk.



**Baxter D. Whitney makes better planers than any other concern making wood-working machinery and stands ready to prove this to your entire satisfaction.**

inist. It reads pretty boastful, but we are disposed to believe that Mr. Whitney can prove his claims. Everything has two sides, and the "off" side of the Whitney planers is the price. If we wanted to buy a 24 inch Double Surfacers to be used in our own shop, and our means were ample, we would pay 5—possibly 10—per cent more for the Whitney planer, but at the time of writing, this planer sells at about 60 per cent more than several other first-class makes of Planers, and we cannot persuade ourselves that it is worth anything like the difference.

## CONTRADICTS ITSELF.

We print here a (reduced) page taken from the manufacturer's catalogue, which provides an example as to how some makers attempt to deceive.

It is barely possible that this maker is honest in putting forth the statement,

## PATENTED BUZZ OR HAND PLANER.

The cut on opposite page represents our BUZZ or HAND PLANER. It is adapted to a great variety of work, such as Planing out of Wind, Jointing, Beveling, Beading, Cornering, Grooving, Tongueing, Rabbeting, Moulding, Squaring, Smoothing, etc.

This machine is much heavier than other Jointers, and consequently runs quiet, and does a very fine grade of work. The Cylinder is of Steel, slotted on two sides for Moulding Cutters, etc.; the tables rise and fall on wedges or inclines and cannot be run into the cutters, can be adjusted instantly by means of hand wheels and are guaranteed perfectly true in all points. Countershaft has tight and loose pulleys, 9 inches in diameter, and 4 inches face.

12-inch Planer, . . . \$120.00; weight, 900 lbs.

16 " " " 140.00; " 980 " 

20 " " " 160.00; " 1050 "

that "This machine is much heavier than other Jointers". It may be possible that he doesn't know any better, but in either case we may apply the old adage, "A fool is as dangerous as a knave".

We know nearly all there is to know about the Jointers (Buzz Planers) made by the principal concerns in this country, have full descriptive particulars of those made by thirty nine different concerns, and in only two cases is the weight of a 16 inch Jointer less than 1050 lbs., the average weight being over 1300 lbs.

In our judgment, the minimum weight for a 16 inch Jointer should be 1200 lbs. We catalogue three styles, and the lightest weighs 1425 lbs.

## PATENTS.

The following most excellent article on the subject of Patents is copied from the *American Machinist*, issue of May 27th, 1897, and contains a great deal that will be of interest to those contemplating the patenting of any article:

## PATENTS.

There is probably no legitimate field of business in which so much illegitimate work is done as in that of patents. Every few days we receive pamphlets put out by solicitors; some of which are no doubt legitimate in intent, and are published by upright and honorable practitioners, in order to give information for which they are often asked; and there is no doubt that the leading object of many of these publications is to induce the inexperienced to unwisely spend money on patents. It is so easy to take money from an inventor for this work without doing anything which is technically dishonest or dishonorable, that the industry of "working" the inventor has come to be very actively prosecuted. It is hard to believe that some of these publications are written with anything less than a deliberate attempt to deceive, as when they lead one to believe that of the nearly half a million patents issued to date, a large majority have been more or less profitable. The leading purpose of these publications is generally to show that anybody can patent almost anything (which, in point of fact, is true), and then to follow that up with a glorification of the general subject of patents, with statements of some of the great fortunes which have been made through patented articles, leading to the inference that a patent is the open door to fortune. The inference is usually enlarged upon by statements of the amounts made from trifling inventions. Near the end comes usually the statement that "delays are dangerous," while at the conclusion is a statement of the fees required. Some of these gentry go so far as to advertise a fixed sum for their own fee and to add "No patent, no pay." Either of these statements attached to one of these documents should be enough to warn an inventor against it. It would be as reasonable to expect a physician to name before hand the fee for curing his patient as to expect a patent solicitor to name his charge for securing a patent. The value of a patent depends upon its claims. The conscientious solicitor always endeavors to make these as broad as possible, and where this is done it very seldom happens that references are not cited against the application by the Patent Office,

which sometimes require the claims to be canceled, but more often require changes, which in some cases are largely verbal so far as their importance goes. These amendments are in turn often rejected, and a long course of correspondence and skilful work are involved in finally securing the allowance of claims to which the inventor is justly entitled. The fixed fee and "no patent, no fee" people, either draw such narrow and valueless claims at the start as to avoid any references, or in case they do not succeed in entirely avoiding references, either cancel the claims outright, or draw new ones still narrower and still more certain to go through.

Regarding the oft-repeated statement that delays are dangerous, there is probably no field of work in which delays are less dangerous than in taking out patents. Few things are justified in being patented before they are tried. The United States patent laws are the most liberal and favorable to the inventor of any in the world, and by them he is allowed two years of public use of his invention prior to the date of his application without in any way prejudicing his right. In an ordinary case the inventor should show a drawing or a photograph of his invention, or the machine itself to a few of his personal friends. The drawing should be signed and dated by these friends, or a signed and dated statement that the machine was seen by them should be made. In case of any question of priority ("interference") between him and another inventor, this drawing or statement will serve as proof to the patent examiner of the date to which he is entitled. The immediate filing of an application can do no more than this, as any patent is liable to be thrown into interference during the first two years of its life. The only reason for haste that can possibly be urged is the avoidance of interference, and this is accomplished just as well by the method described as by filing an application. Meanwhile the inventor's ardor will have a chance to cool down, with the probability, in most cases, that the expense of an application will be saved.

*In general the obtaining of a patent is only a very small beginning toward getting money out of an invention. Only those who have tried it know the difficulty of enlisting the interest of manufacturers in putting these things upon the market. In general, inventors without means and without opportunities for enlisting the interest of others, should be very slow indeed about spending money on patents for inventions, no matter how promising they may be.*

With reference to the foregoing, we—in the main—most heartily concur, and especially with what it has to say in re-

gard to cheap Patent solicitors, their methods and work, and would just like to say a few words in regard to that part of it which relates to delays.

While it is true that, so far as the statutes are concerned, an inventor is "Allowed two years of public use of his invention prior to the date of his application", it is hardly right to say, as a rule, that advantage of these two years of public use may be taken under all circumstances "without in any way prejudicing his right", inasmuch as such a course might—and not infrequently does—put an inventor to expense and trouble to defend and secure his rights.

In the first place, a delay of two years after the invention is in public use before filing an application for a patent, gives large opportunity for other inventors or applicants to file an application for substantially the same invention, and to obtain the issue of a patent therefor. True, the original and first inventor is entitled under the laws to file his application and to secure an interference in the Patent Office with the other party, a proceeding instituted for the purpose of determining the question of priority of invention, but the junior or latest applicant would, as a general rule, have the burden of proof, and the expense of prosecuting an interference, would ordinarily amount to a considerable sum in order that he might protect his right.

Again—until the patent is issued, of course the inventor is not in a position to stop another party from manufacturing his invention.

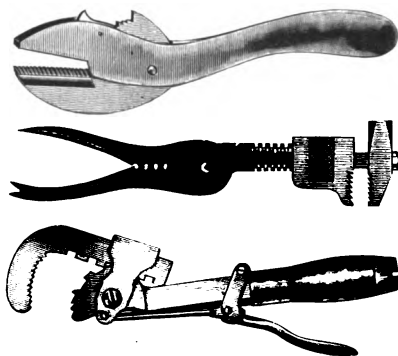
Furthermore, a party having an invention which he desires to sell, or in which he desires to interest capital, is not nearly in so good a position to do so with an unpatented invention as with a patented one.

## A PATENT DEPARTMENT.

We have in past years given advice, more or less valuable, to hundreds of Patentees and would-be investors in Patents, and we know of instances in which our advice has saved thousands of dollars. In no case have we received in return more than a "Thank you", and in the majority of cases not even that (and pay our own postage).

Well, after having dealt out gratuitous advice all these years, and believing that our experience of nearly thirty years has placed us in a position where our opinion in matters of this kind may be of considerable value to those who have entered the field of Patents, and others who contemplate doing so, we have concluded to establish a department in which matters of this kind shall be treated.

The patent attorney seldom makes it his business to ascertain whether the



Here are cuts of three Pipe Wrenches, models of all of which were received in one day. They had all been patented. One party wanted to sell us the patent outright, another simply wanted our opinion as to the mechanical value of the tool, while the third wanted prices on a complete outfit of machinery for making his wrenches.

Without going into the details of the practical value of these tools, we would say briefly, that, in our judgment, the Commercial value (which to those directly interested is the true standard) is less than the cost of obtaining the patents.

cost of marketing the goods may be greater than the profits, whether the article fills a long-felt—or "unfelt"—want, or how many articles of like kind there may be in the market, etc.. etc.

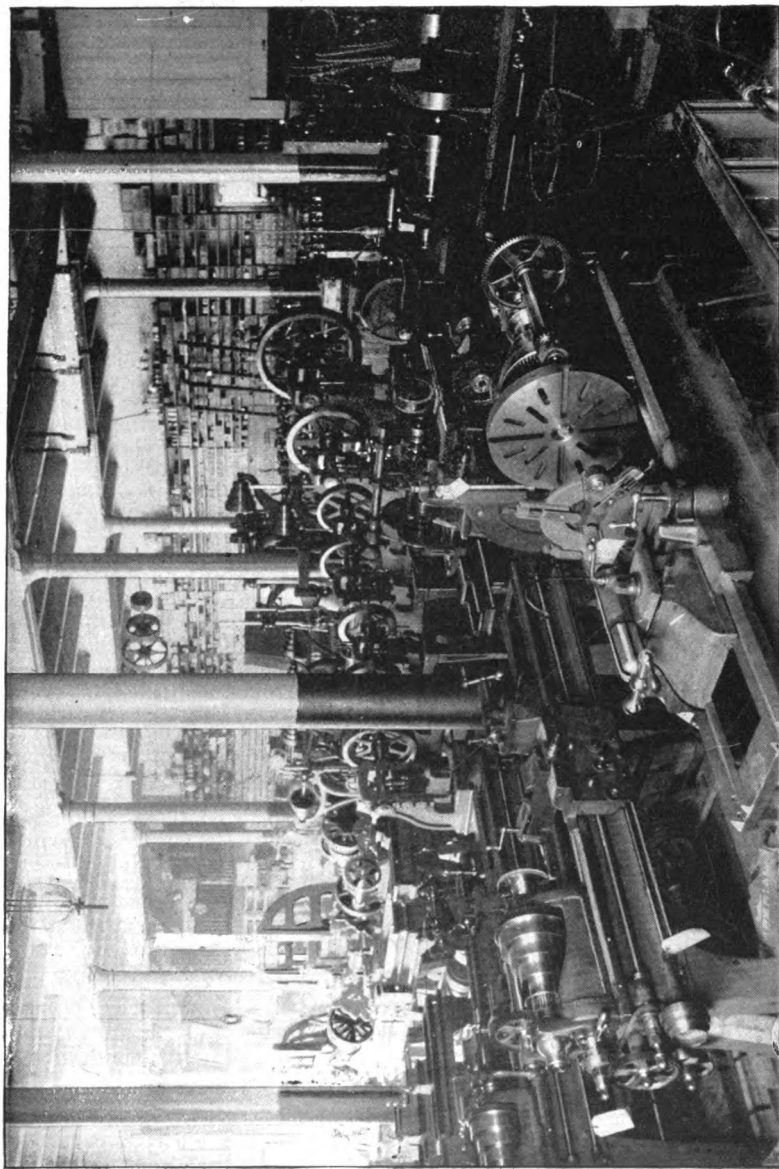
Our intention is to furnish as full and complete information as we possess or are able to obtain in regard to the Practical and Commercial value of Patents. We will not agree that our information will always be pleasant, or even satisfactory to our clients. Despite the alluring statements in the advertising matter of "shyster" patent lawyers, the fact still remains that not one patented article in twenty proves a money maker; and it may be found less expensive to pay us a small amount at the start, than to pay patent fees of from \$60.00 upwards, or—if the patent has been secured—to pay perhaps twenty times this amount in time and money, only to find that there are similar articles in the market that may be better, or that may be made more cheaply; or, in fact, any one of a dozen causes that make the patent of little value.

Understand, that we *do not buy or sell Patents*; also, that the information we purpose furnishing relates only to Tools, Machinery, Hardware, Supplies, and kindred lines such as are suggested by our catalogue.

We know of good Patent Attorneys; men who will give competent and honest service at reasonable prices.

## OUR CHARGE.

Our fee for attending to matters of this sort will be \$10.00, which amount must invariably accompany any inquiry. If we think we can do you no good, the \$10.00 will be returned; but as a rule, it will be just as well for you to say "good-bye" to the 10 when you send it. Inquiries unaccompanied by the cash will not be answered.



MAIN OR STORE FLOOR—VIEW FROM SOUTH SIDE SHOWING MACHINE TOOLS, ETC.

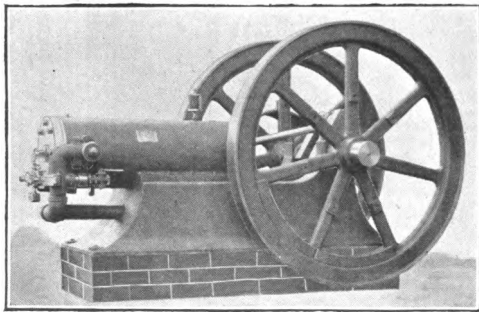
We regret that lack of space forbids our showing a complete set of views of our premises. Our store is 120 ft. in width, 70 ft. in depth, with Six Floors, and to the best of our knowledge, contains more floor space than any establishment of like kind in the world.

## POWER.

*(In our Metal Workers' catalogue, "A Book of Tools" (see page 744 of this book) we illustrate, describe and price a great variety of Machinery and Appliances for the transmission of Power.*

Perhaps it would have been well for us to have included a line of these goods in this catalogue, but we feel confident that any one having this book will want the other, and it seems unnecessary for us to put this matter in both catalogues, besides, it is confoundedly expensive.

Beginning with the source of Power—Boilers and Engines—we have Upright Boilers from 2 to 40 H. P., and Horizontal Boilers from 10 to 300 H. P. (have just completed the installation of seven 300 H. P. boilers for a large municipal lighting plant) Vertical Engines from 2 to 20 H. P., Horizontal Engines from 5 to 300 H. P. in all types.



Gas and Gasoline Engines are becoming more and more popular every day (within the past week we have sold one each, 2, 4, 10, 15 and 25 H. P.) We have no doubt but that for small Powers the Gas Engine is destined to supplant the Steam Engine, in a large majority of cases. There are about one hundred and twenty five concerns in this country making Gas Engines, and it is safe to say that not more than one-half of these concerns know what a good Gas Engine means. We have spent large sums of money and much time investigating

this matter, and honestly believe there are not more than a half dozen *first-class* Gas Engines in the market. We handle one of the half-dozen.

Water Motors are also being used more from time to time. When conditions are right, this is the cheapest form of Power.

After the Engine comes Hangers, Shafting, Couplings, Collars, Clutches, Belting and Pulleys—Wood, Iron and Steel Rim. We carry in stock Cold-Rolled Shafting from  $\frac{1}{4}$  to  $4\frac{1}{4}$  in., Hangers to match in four or five different styles, Wood Pulleys from 3 in. diam. to 72 in. (can furnish up to 360 in.), Couplings and Collars of all sizes, and where articles called for are regular—not special—we can usually fill orders for this class of goods on the same day that order is received. Special Appliances, such as Balance Wheels, Mule Pulley Stands, Binder Frames, Belt Tighteners, etc., we are prepared to furnish in reasonable time.

Gearing of all kinds we can supply. We carry in stock a large variety of Brass and Iron Gears from  $\frac{1}{4}$  to 24 in., and can furnish up to any size.

Leather Belting we carry in stock from the little  $\frac{1}{4}$  in. round up to 24 in. Extra Heavy Double.

We have a very complete equipped belt shop, and we recently made for a customer a 3-ply leather belt 36 in. wide and 108 ft. long—some concerns can make bigger belts than this though. We have, in fact, all Supplies used about a Power Plant, such as Lace Leather, Belting Tools, Rubber and Cotton Hose, Packing, Waste, Oils and Greases, etc., etc.

TO SUM UP—We believe that we carry in stock a larger variety of such Tools, Machinery and Supplies as appertain to a Power Plant, than any other concern. We are aware that this statement may seem a little boastful, but are certain that a careful perusal of this catalogue and "A Book of Tools" will go a long way towards convincing the reader that our claim is in reality a modest one.



## CIRCULAR RE-SAWS.

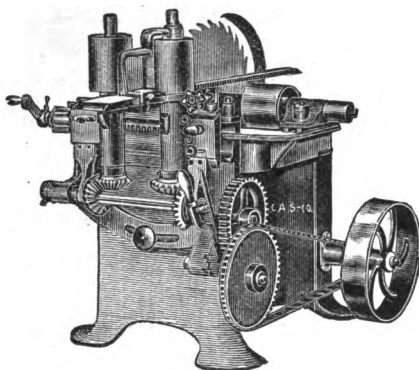


FIG. 5095. SIDING AND RE-SAW.

This machine is designed more especially for small mills, and for those whose work does not demand the larger, heavier machines. The design is good, the machine is stiff and strong, and occupies small space. Feed consists of two 5 in. Rolls, strongly geared. Feed can be stopped or reversed without stopping the machine. Rolls are adjustable together, or independent. This machine is without doubt the most simple and effective Self-Feed Siding and Re-Saw ever offered to the trade, and can be used to advantage in many of the larger mills. Price, with one 24 in. Circular Saw, \$125.00; weight, 800 lbs.

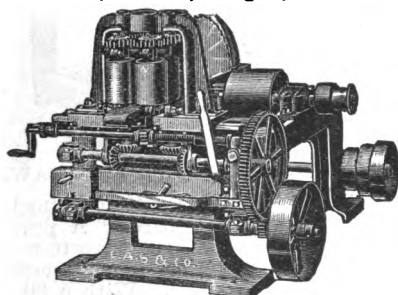


FIG. 5096.

## 24 AND 30 INCH CIRCULAR RE-SAW.

This is an excellent machine for Saw and Planing Mills, Furniture Factories, etc. Feed works consist of four 5½ in. Rolls, which can be instantly set to any bevel. Saw is adjustable to and from Roll; two changes of Feed are provided for; machine has a capacity according

to the kind of work, of from 50 to 100 lineal ft. per minute. Rolls are Self-Centering, which permits, for example, a 1 in. board to follow a 1½ in. board, without a separate adjustment of the Roll. If desired, either set of Rolls can be made stationary while the other yields, which enables the operator to cut a ¼ or ½ in. slab off a board of any thickness up to 4 in.

Price, with 24 in. Saw, splitting 10 in. wide, \$220.00; with 30 in. Saw, splitting 13 in. wide \$230.00; weight, 1500 lbs.

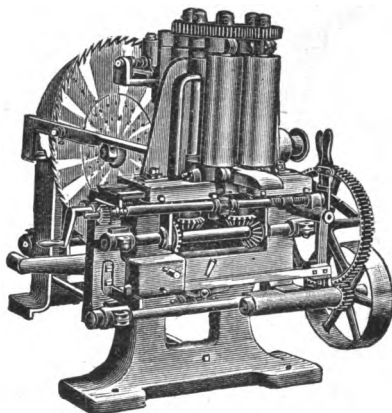


FIG. 5097.

## 36 AND 42 INCH CIRCULAR RE-SAW.

This machine is furnished with either Solid or Segment Saw. The Segment Saw while more expensive, has the advantage of using very little saw kerf. Like the machine shown in Fig. 5096, both sets of Rolls can be adjusted at the same time, or independently, by the crank handle shown on the end. Clamp Rolls are provided outside of Feed Roll, near the top of the saw, for the purpose of holding the lumber as rigid on the top as on the bottom, and thus prevents stub shorts. These Rolls are fitted with pressure springs, and will hold a thin board while the Rolls are open for a thicker one following. These Clamp Rolls are fitted to the Feed Roll housings, and move with them, having all necessary adjustments.

Price, 36 in. Machine, splitting 16 in. wide, with Solid Blade, \$300.00; with Segment Blade, \$330.00; weight 1800 lbs.

Price, 42 in. Machine, splitting 19 in. wide, with Solid Blade, \$330.00; with Segment Blade, \$360.00; weight 2000 lbs.

## SHINGLE MACHINERY.

The line of Shingle Machinery we handle is very large and complete. We show one style of machine. Other styles and sizes can be furnished if customers will kindly advise what is desired, and what the conditions are.

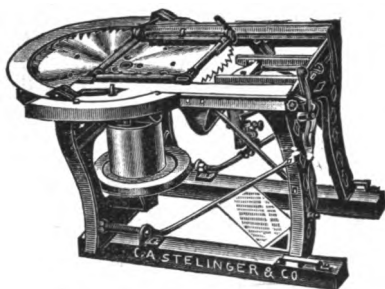


FIG. 5098. SHINGLE MACHINE.

This is a heavy, substantial machine for cutting Shingles, Heading and Box Boards. Is made in two sizes, with 38 and 42 inch saws. The first size is suitable for shingles from 16 to 19 in. long, the other from 16 to 26 in. long. Weight of machines is 1250 and 1500 lbs.

With Common Carriage, \$320.00 and \$410.00; with Stealer \$370.00 and \$460.00.



FIG. 5099. GANG LATH MILL.

This machine is of late design, and possesses many valuable features. It is arranged so that four 16 in. Saws can be used. The 3 Saws next to the guide saw the lath, and the fourth saw is generally used in sawing the pickets. The machine has a capacity of about 65,000 hemlock lath, and 80,000 white pine lath per day. Price does not include saws.

Price, \$104.00; weight, 900 lbs,

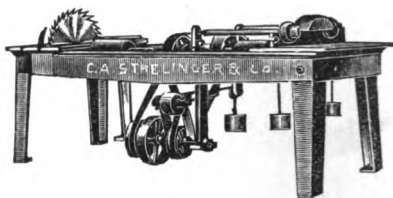


FIG. 5100.

## GANG LATH MILL AND BOLTER.

This is practically the same machine as the foregoing with Bolting Machine attached. The Bolter is arranged for 26 in. Saw, and has a driven Feed Roll in table.

Price, \$200.00; weight, 1800 lbs. Saws are not included in this price.

## SINGLE BOLTER.

This is the same machine as the foregoing, without Lath Mill.

Price, \$38.00; weight, 900 lbs. Saws are not included in this price.

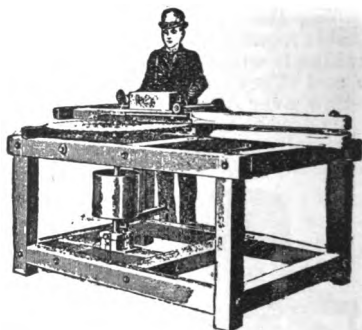


FIG. 5101. HAND FEED FLAT SAW.

This Saw is used for cutting Shingles, Heading and Box Boards. A person can make from 30 to 40 cuts per minute. The machine is simple in construction and moderate in price. With a 36 in. Saw, Blocks up to 13 in. wide and 20 in. long may be cut, and Heading from  $\frac{1}{2}$  to 1 inch in thickness.

Price, with 36 inch Saw, \$105.00; with 40 in. Saw, \$125.00.

THIS BOOK is copyrighted and we caution all parties against using, without our written permission, any of the original matter contained herein.

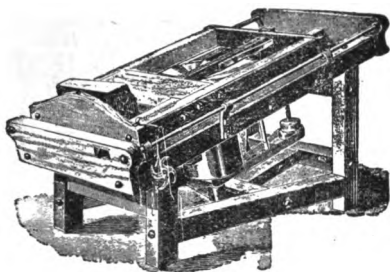


FIG. 5102.

**GUE'S IMPROVED SHINGLE AND HEAD CUTTING MACHINE.**

This machine is of the same type as the foregoing; is Self-Feeding and Self-Setting. Feed can be stopped at the end of every cut if desired, and Shingles can be cut of any desired taper. Capacity of machine is from 20,000 to 25,000 Shingles per day.

Price, with 36 in. Saw, \$140.00; with 40 in. Saw, \$160.00.

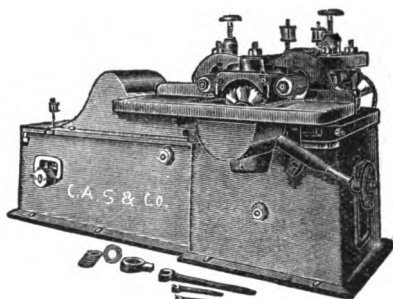


FIG. 5104. HEAVY GANG SAW.

This is a very heavy, strong machine. The Standard size is made to use 8 Saws, but can be arranged for as many as 15 Saws. Cuts  $\frac{1}{4}$  to 3 in. plank 18 in. long or over. Designed especially for the production of Wood Rims, Rule and Yard Stock, or any similar work desired in large quantities.

It will produce smooth, accurate work—in many cases smooth enough to avoid the necessity of further planing.

Special circular will be sent upon application.

Price, \$661.00; weight, 5800 lbs. Price does not include Saws.

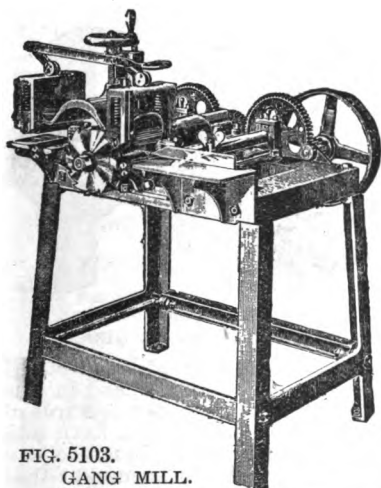


FIG. 5103.

**GANG MILL.**

This machine can be used for cutting Lath and Pickets. It is Self-Feeding and Self-Adjusting

Cuts all Laths, or one Picket and the balance of the piece into Laths, or can be changed to cutting Pickets or Broom Handles separately. Capacity, from 30,000 to 40,000 per day; 6 Saws. Price, with Saws, \$130.00; wght. 625 lbs.

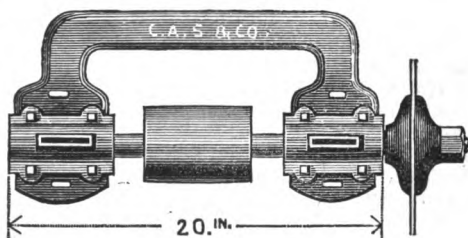


FIG. 5105. YOKE SAW ARBOR.

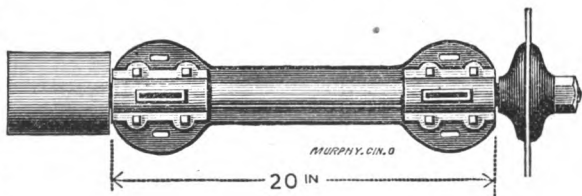


FIG. 5106. STRAIGHT SAW ARBOR.

Our Saw Arbors have Self-Oiling Boxes; they are strong and well made

throughout. We have both styles; prices of either are the same. The dimensions given are:

A—Length out to out of Boxes.

B—Length of Journal.

C—Diameter of Pulley.

D—Diameter of Collars.

E—Diameter of Arbor.

F—Size of Hole in Saw.

No.	Price.	A	B	C	D	E	F
1	\$8.00	11	3	3	2½	1½	1 in.
2	9.60	13	3½	3½	3	1½	1½
3	11.20	15	4	4	3½	1½	1½
4	12.80	16½	4½	4½	4	1½	1½
7	16.00	22½	5	6	5½	1½	1½
9	20.80	28½	6½	7	6½	1½	1½
10	25.60	32½	6½	8	7½	1½	1½

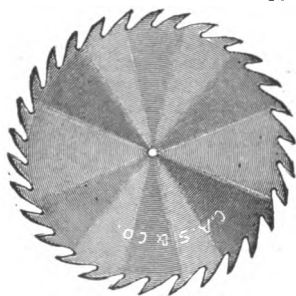


FIG. 5107. CIRCULAR SAW.

We price here a line of Circular Saws. Our stock at the present time consists of Henry Disston & Son's make, the quality of which is so well known as to need no comment here.

We can furnish to order Chisel Tooth, Shingle, Veneer, Concave, Grooving, Miter, and special Saws of almost any kind.

Following prices apply to the regular line of Patent Ground and Tempered Solid Tooth Circular Saws:

Diameter.	Each.	English Gauge.	Size of Hole.
3 in.	\$0.50	21	½ in.
4	0.70	19	¾
5	0.85	19	¾
6	1.00	18	¾
7	1.15	18	¾
8	1.35	18	¾
9	1.65	17	¾
10	1.80	16	1
11	2.10	16	1
12	2.25	15	1½
14	2.70	15	1½
16	3.30	14	1½

Diameter.	Each.	English Gauge.	Size of Hole.
18	4.20	13	1½
20	5.10	13	1½
24	7.20	11	1½
26	8.40	11	1½
30	10.80	10	1½
32	12.00	10	1½
36	15.30	9	1½
38	18.00	9	1½
40	21.00	9	2
42	25.20	8	2
44	30.00	8	2
46	30.00	8	2
48	42.00	8	2
50	48.00	7	2
52	54.00	7	2
54	60.00	7	2
56	69.00	7	2
58	78.00	7	2
60	87.00	6	2
66	120.00	6	2
72	174.00	6	2

Prices upon other sizes furnished upon application.

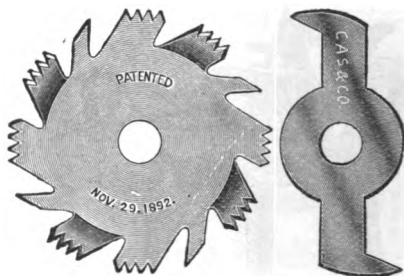


FIG. 5108.

HUTHER DADO HEAD OR GROOVER.

The Huther Dado Head was brought out about three years ago, and in this short time there have been upwards of 3000 sets of them sold. We have sold all kinds of Dado Heads; do not believe there is anything in the market that equals these in point of convenience, quickness of adjustment, and for durability.

Fig. 5109 shows a sample of work, and the work from which this cut was taken is as sharp and clean cut as the picture.

These Groovers can be furnished suitable for any width grooves from ¼ to 2 in. or over. They consist of 2 outside saws, each of which is a groover in itself, and as many inside cutters as required. In-

side Cutters are made  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{1}{2}$  in. thick; Outside Cutters,  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{1}{2}$  in. thick.

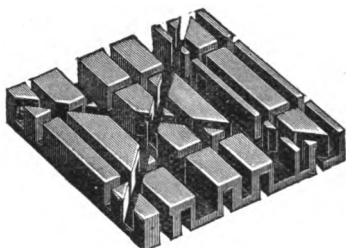


FIG. 5109. SAMPLE OF WORK.

They will cut a perfect groove either with or across the grain, and will not leave a rough edge as is the case with ordinary groovers. Where a wider groove than  $\frac{1}{2}$  in. is needed, Inside Cutters will be required. Guaranteed to give satisfaction in all respects.

Set No. 1 cuts grooves  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{3}{8}$  in.

Set No. 2 cuts  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$  in.

Set No. 3 cuts from  $\frac{1}{2}$  to  $\frac{1}{2}$  in. inclusive, by 16ths (10 sizes).

Set No. 4 cuts from  $\frac{1}{2}$  to 1 in. inclusive, by 16ths (14 sizes).

No. 5 cuts from  $\frac{1}{2}$  to  $1\frac{1}{2}$  in. inclusive, by 16ths (22 sizes).

Set No. 6 cuts from  $\frac{1}{2}$  to 2 inches inclusive, by 16ths (30 sizes).

#### PRICE LIST OF GROOVERS.

Diam.	Set No. 1.	Set No. 2.	Set No. 3.	Set No. 4.	Set No. 5.	Set No. 6.
6	\$5.80	\$7.05	\$8.65	\$9.90	\$12.40	\$14.90
7	6.80	8.15	9.85	11.20	13.90	16.60
8	7.60	9.05	10.85	12.30	15.20	18.10
9	8.35	9.90	11.90	13.45	16.55	19.65
10	9.15	10.80	13.00	14.65	17.95	21.25
12	10.85	12.95	15.45	17.55	21.75	25.95

In ordering, state number of Set, diameter of Groover, and size of Hole wanted. Extra Cutters may be had at any time.

#### 5 INCH DADO HEAD.

This size is made especially for use on Hand and Foot Power machines. All of these have  $\frac{1}{2}$  in. holes.

Set "E", \$5.60,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ .

Set "F", \$6.70,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ .

Set "G", \$7.80,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ .

Set "H", \$8.60, the same as "G", with the addition of 1 and  $1\frac{1}{4}$ .

To make a  $\frac{1}{8}$  in. cut, a  $\frac{1}{8}$  outside cutter is required, which may be used in combination with the other cutters.

Price, of  $\frac{1}{8}$  Outside Cutter, \$3.00.



FIG. 5110. STEEL BUSHINGS.

A great many machine users are in the position of the old sailor, who said, that when a rope was too short he could splice it, but when it was too long he didn't know what to do.

If the hole in a Saw or similar tool, is too small, it can be reamed or filed out, but if too large, it is a more difficult matter to arrange for.

These Steel Bushings will be found a great convenience in many ways and for many purposes. We have them in two thicknesses,  $\frac{1}{8}$  and  $\frac{1}{4}$ ; and in three lengths,  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{1}{2}$  (longer lengths can be furnished if desired). Measurements given are outside, thus  $\frac{1}{8} \times 1$  would be  $\frac{1}{8}$  inside, and  $\frac{1}{4} \times 1$ ,  $\frac{1}{4}$  inside.

Price,  $\frac{1}{8} \times \frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{1}{2}$ , each, \$0.10; doz., \$1.00.

Price,  $\frac{1}{4} \times \frac{1}{8}$ , 1,  $1\frac{1}{2}$ ,  $1\frac{1}{2}$ , each, \$0.15; doz., \$1.00.

Price,  $\frac{1}{8} \times 1\frac{1}{2}$ ,  $1\frac{1}{2}$ ,  $1\frac{1}{2}$ , each, \$0.20; doz., \$2.00.

Price,  $\frac{1}{4} \times \frac{1}{2}$ , 1 and  $1\frac{1}{2}$ , each, \$0.12; doz., \$1.25.

Price,  $\frac{1}{8} \times 1\frac{1}{2}$ ,  $1\frac{1}{2}$ ,  $1\frac{1}{2}$ , each, \$0.20; doz., \$2.00.

Price,  $\frac{1}{4} \times 1\frac{1}{2}$ , 2 and  $2\frac{1}{2}$ , each, \$0.35; doz., \$2.50.

## DADO MACHINE AND ROSETTE CUTTERS.

The tools here described are of latest design; valuable, convenient and labor-saving; in many instances will take the place of machinery much more costly

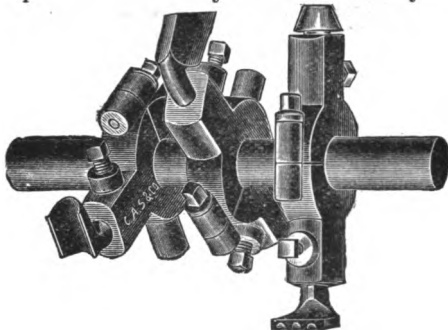


FIG. 5111. DADO MACHINE.

Used for making square turned work, such as Balustrades, Plinth and Corner Blocks, for cutting Beads in moulding on segment casing, etc., etc.

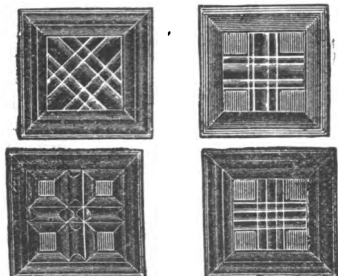
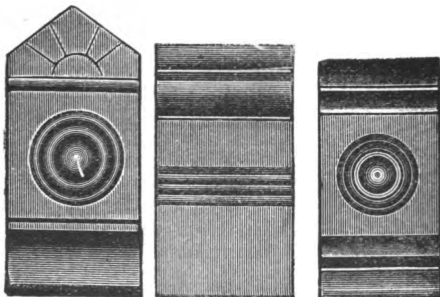


FIG. 5112. SAMPLES OF PLINTH AND CORNER BLOCKS.

This Linham Dado Machine can be attached to any wood-working machine

that has a mandrel for wood-working heads and saws; is simple in construction, easy to operate, and not liable to get out of order. For gaining or plain dadoing alone it is worth the price in any planing mill. Will cut plain dado from  $\frac{1}{4}$  to 3 in. wide. The illustrations represent but a few out of thousands of styles that can be made.

The heads work on any size mandrel from  $\frac{1}{4}$  to 2 $\frac{1}{2}$  in diam., and are fastened with Clamping Set Screws, using no nut or collar. To use the set of three heads the mandrel should not be less than 4 in. clear of head. If saw arbor is not long enough to admit head, by sending us size of thread, length and whether right or left-hand, we can furnish sleeve for same. Price of Sleeve, \$5.50.

Linham Dado Machine complete, including 3 Brass Heads, 26 Assorted Cutters, Wrench, Collar and set of Files, \$55.50. *In ordering, be particular to give exact size of mandrel.*

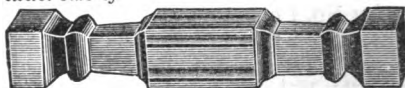


FIG. 5113.

SAMPLES OF BALUSTRADES.

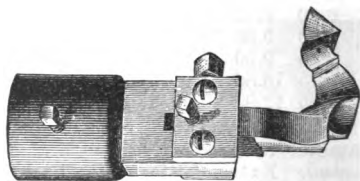


FIG. 5114.

ROSETTE CUTTER AND HOLDER.

This is the latest improved Rosette Cutter; will cut Rosettes from  $\frac{1}{4}$  in. up, and will do the work in from one-tenth to one-fourth the time required by hand. A boy can operate it as well as the most experienced turner. Every Rosette is a duplicate of the others. This Cutter may be used in any lathe

in which the arbor and tail stock does not revolve when being moved backward and forward. Speed should be 2500 or over.

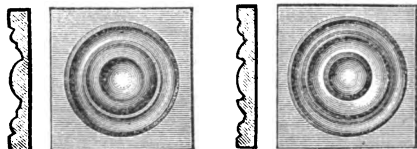
The tool consists of Cutter Holder, and separate Cutter for each style of Rosette required. One holder only is necessary, as any of the Cutters will fit in this.

Cutter Holder for lathes, \$6.65; Cutters for lathe, each, \$5.50. In ordering Holder, give outside diameter of arbor.

#### BORING MACHINE CUTTER.

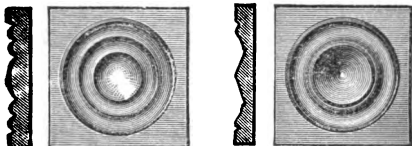
This Rosette Cutter is made with double cutters suitable for use in boring machine. Speed 2000.

Holder for Boring Machine, \$6.65; Cutters (two required), per Set, \$8.90.



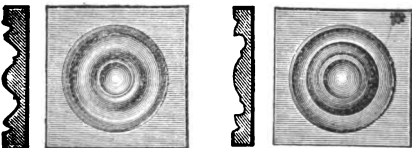
No. 1.

No. 6.



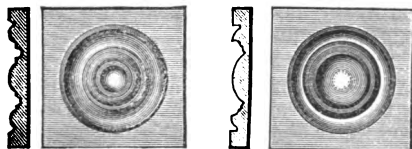
No. 7.

No. 8.



No. 11.

No. 17.



No. 18.

No. 30.

FIG. 5115. ROSETTE PATTERNS.

Cutters for above patterns for  $3\frac{1}{2}$  in. rosettes are kept in stock. Cutters

made for any design or size rosette at same price as regular cutters. In ordering Cutters, send sample of rosette to be cut, or drawing of sectional view, full size.

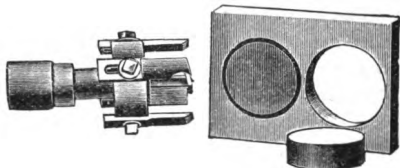


FIG. 5116. BORING HEAD.

The cut illustrates a Boring Head for large holes. This Head, instead of reducing the entire core of hole into shavings, cuts a margin about  $\frac{1}{4}$  in. wide. Will cut a hole perfectly smooth without breaking out edges when going through. Requires but little power to operate. The Head is not adjustable, but extra Knives can be fitted for any additional size required, if within the range of 2 in. per head.

In ordering, state thickness of stuff if more than  $1\frac{1}{2}$  in. Also upon what machine it is to be used.

Price, 2 in., \$9.00; 3 in., \$11.00; 4 in., \$12.50; 5 in., \$16.00; 6 in., \$20.00.

Extra Knives for 2, 3 or 4 in., per set, \$5.60; for 5 and 6 in., per set, \$7.20.

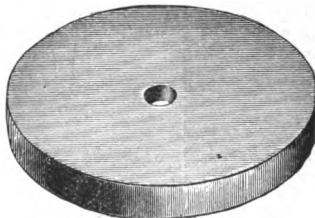


FIG. 5117. SMALL GRINDSTONE.

We recently came across a concern that makes a line of Small Grindstones of fine grit. The Lathe Grindstones, priced on page 833, are rather coarse, being the same grit as the regular large stones.

These Stones will be found very desirable for many kinds of work. They are from 1 in. to  $1\frac{1}{2}$  in. thick and have  $\frac{1}{2}$  in. round holes in the  $4\frac{1}{2}$ , 6 and 8 in. sizes, and 1 in. hole in the 11 in. size.

Prices,  $4\frac{1}{2}$  in., \$0.55; 6 in., \$0.60; 8 in., \$0.75; 11 in., \$0.95.

## MORTISING MACHINES.

The machines shown here are of late design, are well built and substantial. The Connection, Spindle, Straps and Reverse are made of steel, with heavy Stops on the Reverse, so that there is no danger of its breaking off. An especially desirable feature is the Patented Conical Split Brass Boxes, in which, the Quill and Spindle run, and the mode by which the speed of the Reverse is reduced to prevent battering and breaking of stops.

All machines have Tilting Table so as to be set at any angle. Prices of machines include 5 Chisels; usually  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{1}{8}$  and  $\frac{1}{16}$  with the No. 3 machine, and  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $\frac{1}{8}$  with the No. 2 machine.

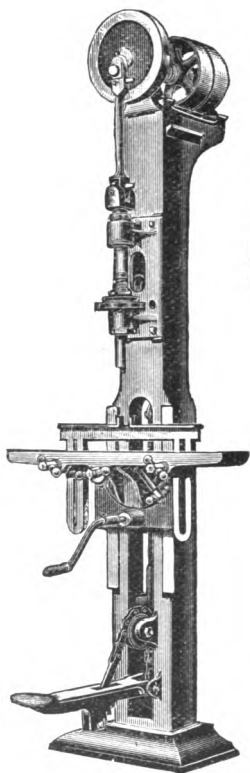


FIG. 5118.  
NO. 3 PLAIN MORTISER.

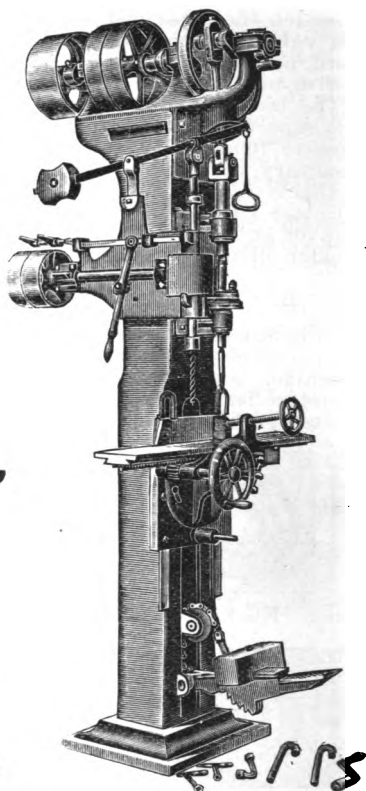


FIG. 5119.  
NO. 2 MORTISER & BORER.

No. 3 Machine, \$110.50; weight, 750 lbs.

This machine is used principally for Sash and Blinds, Cabinet work, and all medium and light mortising.

No. 2 Machine, with Plain Table, \$133.00;

With Plain Table and Boring Attachment, \$140.00;

With Clamp, Pinion Feed and Swinging Table, \$140.00;

With Clamp, Pinion Feed and Swinging Table, and Boring Attachment, \$150.00. Weight of No. 2 machine, 1200 lbs.

This machine is designed for Doors, Sash, Blinds, Agricultural work, Carriages, Wagons, etc.



FIG. 5120.  
MORTISING MACHINE CHISEL.

When it comes to selling Mortising Machine Chisels, the dealer's lot "is not a happy one." Manufacturers of

Mortising Machines have always taken a fiendish delight in making the size and taper of the holes in their machine spindles different from anything that had ever been made before, presumably so that the user of the machine would have to go to the maker for his Chisels. The idea is not a bad one so far as the



maker is concerned, but it has entailed a great amount of annoyance and inconvenience to mortising machine users.

We carry quite a line of different styles and sizes of Mortising Chisels, and can hit about one case in three. Our feelings are never hurt when our customers buy their Mortising Chisels elsewhere. Prices on Mortising Chisels range from \$1.00 for the common sizes and styles, up to \$2.00 for special styles and sizes.

### FOOT POWER MORTISER.



FIG. 5121.

This cut shows the Table Tilted for cutting work on an angle. Can be tilted either way, to the right or left, and to any angle desired.

The Diamond Mortiser is by all odds the best Foot Power Mortising Machine in the market. Strong, substantial, has powerful motion and large range for DIAMOND MORTISER work. Has Horizontal, Vertical and Angle Adjustments; will mortise  $\frac{1}{2}$  to 1 in. wide, 3 in. deep, and with the addition of Diamond Adjustable Tenoning Tool (Fig. 5123) will cut tenons  $\frac{1}{2}$  to  $\frac{3}{4}$  in. thick, 3 in. wide.

The Chisel Reverser is attached to the upper end of Chisel Spindle, the working parts are milled to a gauge, and it is provided with a stop, to secure perfect accuracy in reversing the chisel.

Price with one each,  $\frac{3}{8}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$  in.

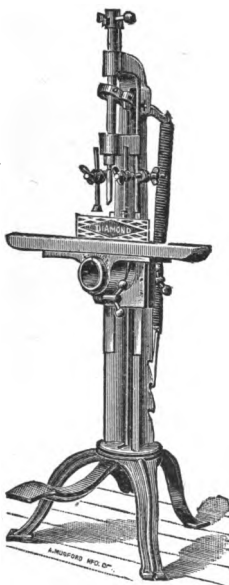


FIG. 5122.

Mortising Chisels, \$22.50. Shipping weight, 200 lbs.

Diamond Mortising Chisels  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $1\frac{1}{2}$ ,  $2$ ,  $2\frac{1}{2}$ ,  $3$ ,  $4$ ,  $5$ ,  $6$ ,  $8$ ,  $10$  in., each, \$1.00.

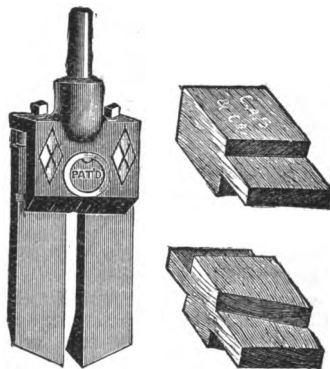


FIG. 5123.

### DIAMOND TENONING TOOL.

This is a new and improved Tenoning Tool, which will be found a valuable attachment to the Diamond Mortising Machine. The knives are constructed with side lips, and have a draw or shear cut on both front and side edges, which leaves the shoulders and sides of tenon smooth and true. We can furnish this tool with shank fitted to any make of mortising machine, provided we are furnished with a templet giving exact size of shank.

Price of No. 2 Diamond Tenoning Tool, \$4.50.

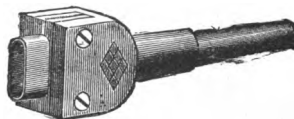


FIG. 5124.

### DIAMOND BLIND SLAT MORTISING TOOL.

This Tool will be found a valuable attachment to the Diamond Mortising Machine in making Sash, Screen Doors, Frames, and for all Tenoning.

Price, with one each  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and  $1\frac{3}{4}$  in. Cutters, \$4.50.

## HOLLOW CHISEL MORTISING MACHINES.

Hollow Chisel Mortising Machines have come into very general use within the past ten or fifteen years. The mortisers are formed by a square hollow chisel, which has an auger revolving in the center. The auger revolves as it passes into the material, while the Chisel remains stationary, the auger carrying the chips through to the back. Some of these machines have Automatic Feed, while others have Foot Power Feed and Automatic Return.

Users of these machines differ as to the amount of work they will do over the ordinary Mortising Machine. Some claim they will do three or even four times as much, and there is no doubt but that under any circumstances they will do at least twice as much, as a finished mortise free of chips can be made in nearly the time required to bore the holes for mortiser's work on an ordinary mortising machine.

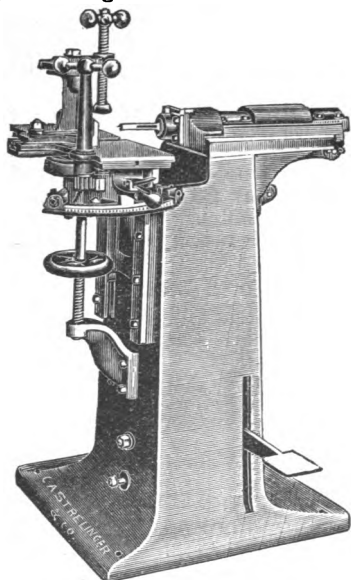


FIG. 5125.

### NO. 1 HOLLOW CHISEL MORTISING MACHINE.

This machine has Foot Power Feed with Quick Automatic Return. Length

of stroke can be changed as desired, up to 3 inches in length. Has Universal Table, working to Stops and with Graduated Arc. Suitable for Mortises from  $\frac{1}{2}$  to  $\frac{3}{4}$  in thickness, up to any width not more than 6 in. and to 3 in. deep. Price includes  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{1}{2}$  Chisels and Bits, and Countershaft.

Price, \$200.00; weight, 900 lbs.

### NO. 2 AUTOMATIC HOLLOW CHISEL MORTISING MACHINE.

This machine is of the same capacity as the No. 1, but somewhat stronger and heavier, and is Automatic in its Feed, having three rates of Feed with Quick Return to the Tool Carriage.

Price, \$300.00; weight, 1200 lbs.

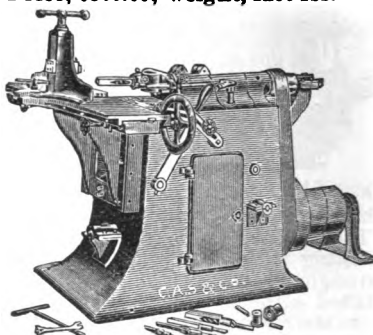


FIG. 5126.

### NO. 5 AUTOMATIC HOLLOW CHISEL MORTISING MACHINE.

The Tool Plunger has an Automatic Motion controlled by the Horizontal Lever, also the Stops on the Reversing Rod which regulate the length and location of the stroke, and has a slow In-feed with a Quick Return. Shortening the Stroke increases the number of strokes in direct proportion. Bit has two changes of speed. Table is counter-balanced, and is raised and lowered by Lever at side of machine.

Range of machine  $\frac{1}{8}$  to 1 in. thick. Will make mortises 5 in. deep and take in stuff to 10 in. wide.

Price includes  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$  and 1 inch Chisels and Bits, and Countershaft.

Price, \$425.00; weight, 2000 lbs.

The Lord & Burnham Co., of Irvington, N. Y., write, "We estimate the time saved over the old style machine,

where mortises have to be cleaned out, to be equal, in one year's use, to the cost of the machine.

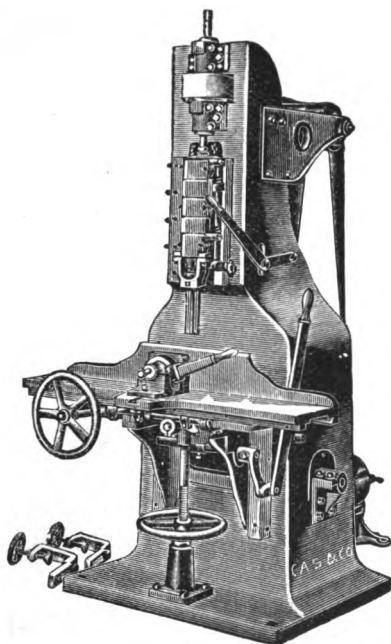


FIG. 5127.

#### NO. 4 VERTICAL AUTOMATIC HOLLOW CHISEL MORTISING MACHINE.

This machine is built for using one or two Chisels. The Double Machine can be operated with one Chisel if desired.

Double Machine, as shown in cut, has two Chisels placed a fixed distance apart, thus taking two cuts at one operation. Range of machine  $\frac{1}{4}$  to  $\frac{3}{4}$  in. Will make mortises to 5 in. deep and take in stuff up to 12 in. wide. Price includes  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ , and  $\frac{3}{4}$  in. Chisels and Bits, and Countershaft.

Price, \$550.00; weight, 3000 lbs.

Single Machine uses one Chisel, similar to the No. 5 Automatic Chisel and Mortiser. Range of machine  $\frac{1}{4}$  to  $1\frac{1}{2}$  in. Price includes  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and 1 in. Chisels and Bits, and Countershaft.

Price, \$550.00, weight, 3000 lbs.

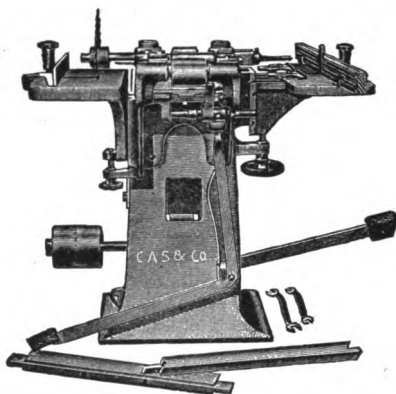


FIG. 5128. HOLLOW CHISEL SASH MORTISER, AND RELISHER.

In this machine the Mortising is performed by the use of a Square Hollow Chisel, which makes a clean mortise without clipping the edges of stock. The Gauge is provided with all necessary Stops to regulate the work properly. Relishing Attachment is on other side of machine, so two operators can work at the same time.

Sash Mortiser only, with  $\frac{3}{4}$  in. Chisel and Bit and  $\frac{1}{4}$  Machine Bit, \$106.25, weight, 525 lbs.

Sash Mortiser and Relisher, with Chisel and Bit, Machine Bit and 12 in. Rip Saw, \$127 50; weight, 600 lbs.

We can also furnish a Blind Rail Router, for cutting the recess in rails of Blinds for receiving the rod; it is an efficient attachment, and does not interfere in any way with the other parts of machine. Price of Attachment, \$17.00.

#### HOLLOW CHISELS AND BITS.

We print here lists of Hollow Chisels and Bits for same. The sizes given in tables are those that are used for the most part in Sash, Door and Blind, and similar work. Can furnish a great variety of sizes besides those given here.



FIG. 5129. HOLLOW CHISEL BIT.

The Bit represented here is the "Ford" Hollow Chisel Bit. In this Bit are com-

bined two excellent qualities, Strength and Clearance. The peculiar form of construction of the Hollow Chisel Bit (the head being larger than the body) is such that the ordinary type of Bit is weak, back of the head. If a Bit breaks, the Chisel is very apt to break too. The construction of the Ford Bit is such as to make it very much stronger than the ordinary type, and the single twist gives much better clearance than can be obtained in any double twist Bit, therefore it will not choke up and break the chisel. Other sizes than those given in table can be furnished. The length given is length of twist.

In ordering, always state length of Twist, and length and size of Shank, or accompany order with sample. Also give size of hole in Chisel, or send sample to have Bit fitted to.

#### LENGTH OF TWIST, INCHES.

Diam. inches,	6	7	8	9	10
$\frac{1}{2}$ { Each, \$0.50 \$0.56 \$0.62 \$0.68 \$0.74					
Doz., 5.40 6.05 6.70 7.35 8.00					
$\frac{5}{16}$ { Each, .50 .56 .62 .68 .74					
Doz., 5.40 6.05 6.70 7.35 8.00					
$\frac{3}{8}$ { Each, .50 .56 .62 .68 .74					
Doz., 5.40 6.05 6.70 7.35 8.00					
$\frac{7}{16}$ { Each, .58 .64 .70 .76 .82					
Doz., 6.30 6.95 7.60 8.25 8.90					
$\frac{1}{2}$ { Each, .67 .73 .79 .85 .90					
Doz., 7.20 7.85 8.50 9.15 9.80					
$\frac{9}{16}$ { Each, .75 .82 .88 .95 1.02					
Doz., 8.10 8.80 9.55 10.30 11.20					
$\frac{5}{8}$ { Each, .83 .91 .98 1.06 1.14					
Doz., 9.00 9.80 10.60 11.45 12.25					
$\frac{3}{4}$ { Each, 1.00 1.09 1.18 1.27 1.35					
Doz., 10.80 11.80 12.70 13.75 14.70					
$\frac{7}{8}$ { Each, 1.16 1.27 1.38 1.48 1.58					
Doz., 12.60 13.75 14.85 16.00 17.15					
1 { Each, 1.33 1.45 1.57 1.68 1.81					
Doz., 14.40 15.70 17.00 18.30 19.60					



FIG. 5130. HOLLOW CHISEL.

Our Hollow Chisels are of the Job T. Pugh make. The Pugh Co. have made these for many years, and we believe

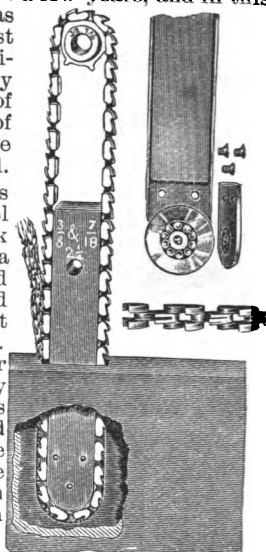
these Chisels will be found superior in all respects.

Size.	Each.	Size.	Each.	Size.	Each.
$\frac{1}{2} \times \frac{1}{2}$	\$3.28	$\frac{3}{4} \times \frac{1}{2}$	\$3.28	$\frac{1}{2} \times \frac{3}{4}$	\$4.94
$\frac{1}{2} \times \frac{1}{4}$	3.28	$\frac{1}{2} \times \frac{1}{4}$	3.83	$\frac{1}{2} \times \frac{1}{2}$	4.94
$\frac{1}{4} \times \frac{1}{4}$	3.28	$\frac{1}{4} \times \frac{1}{2}$	3.83	$\frac{1}{4} \times \frac{3}{4}$	4.94
$\frac{1}{4} \times \frac{3}{4}$	3.28	$\frac{1}{4} \times \frac{1}{4}$	3.83	$\frac{1}{4} \times \frac{1}{2}$	4.94
$\frac{3}{8} \times \frac{3}{4}$	3.28	$\frac{1}{4} \times \frac{3}{4}$	4.39	$\frac{3}{8} \times \frac{3}{4}$	4.94
$\frac{3}{8} \times \frac{1}{4}$	3.28	$\frac{1}{2} \times \frac{1}{4}$	3.83	$\frac{3}{8} \times \frac{1}{2}$	5.50
$\frac{3}{8} \times \frac{1}{2}$	3.28	$\frac{1}{2} \times \frac{1}{2}$	4.39	$\frac{3}{8} \times \frac{3}{4}$	5.50

#### CHAIN SAW MORTISER.

The Chain Saw Mortiser is of comparatively recent origin; has been on the market but a few years, and in this short time has attained a most important position, not only on account of the quantity of work, but the quality as well.

The mortise is made by a steel chain, each link of which has a sharpened tooth so formed as to carry out its own chip. The Chain Bar determines by its dimensions the length and depth of the mortise, the width of chain fixing the width of mortise.



The Table is fed up mechanically (but under the control of the Foot Lever) towards the chain. The Mortise, either "Blind" or "Through," Straight or Tapering, is made at a single cut, and the Table descends rapidly, and is ready for another mortise. So quickly is this done as to almost limit the machine's output by the ability of the operator to supply it with work. All wood hard or soft can be worked equally well. There is no reversing on usual depth of mortises, no splitting, nor core-cleaning, no shock or jar to the machine. Taper or Angular Mortises can be made, good

glue surfaces, perfect faces, and joints, and uniformity are secured. Wood as thin as  $\frac{3}{8}$  in. can be mortised any way of the grain.

Tools are easily changed; all parts of machine are accessible.

The Alaska Refrigerator Co., Muskegon, Mich., write, "The best record we have is 1152 mortises in one hour. It is a time-saver and money-maker."

The Sierra Lumber Co., Red Bluff, Cal., "Saving over old method \$3.50 to \$4.00 per day. No trouble in operating from the start."

E. T. Burrowes & Co., Portland, Me., "Saving enough in less than a year to pay for the machine."

Chain. Chain Sharpener with Spool and Wrench.

Floor space, 47x67 in.; height, 67 in. Price, \$\*; weight, 1450 lbs.

#### NO. 2 STANDARD MORTISER.

The No. 2, in addition to the conveniences of No. 1, has a Compound Table permitting long mortises or adjacent mortise to be made by a series of cuts without unclamping the material.

Takes all sizes of Chain Saw from  $\frac{1}{4}$  to 1 in. wide. Price includes one size Chain, Chain Sharpener with Spool and Wrench.

Price, \$\*; weight, 1500 lbs.

#### NO. 3 CHAIN SAW MORTISER.

This machine differs from the foregoing, in that several parts not necessary on a light machine have been omitted, this, however, without impairing its efficiency on the work for which it was designed, Sash, Blinds, Screens, Light Furniture, etc. The output on ordinary work is from 8,000 to 10,000 mortises per day. Takes all sizes of Chain Saw from  $\frac{1}{4}$  to  $\frac{3}{4}$  in. wide.

Price includes one size Chain, Chain Sharpener with Spool and Wrench.

Price, \$\*; weight, 800 lbs.

#### TABLE OF CAPACITIES.

	No. 1.	No. 2.	No. 3.
Adjustment of Back Rest, 16	16	...	in.
Rise and Fall of Table.....	24	24	5 $\frac{1}{2}$ "
Shortest Mortise.....	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$ "
Longest Mortise (with one cut).....	3 $\frac{1}{2}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$ "
Longest Mortise (without unclamping).....	...	13	..."
Deepest Mortise (one cut), 6 $\frac{1}{2}$	6 $\frac{1}{2}$	6 $\frac{1}{2}$	4 $\frac{1}{2}$ "
Deepest Mortise (by reversing).....	13	13	..."

Nos. 1 and 2 Machines will mortise to center of 5 in. piece; No. 3 to center of 2 in. piece.

\*The manufacturers of these machines will not permit us to print prices (not even approximately). They no doubt have what they consider good reasons, but we think they are wrong in taking this action. However, we will be pleased to make prices upon application.

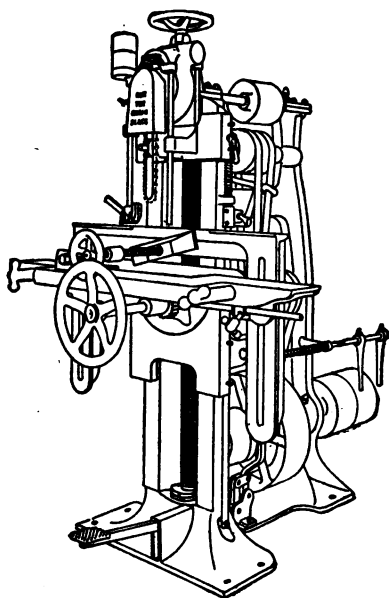


FIG. 5131.

#### NO. 1 STANDARD CHAIN SAW MORTISER.

This machine is suitable for the general work in Sash, Door and Blind factories; for Screens, Refrigerators, Furniture, Organs, Interior Finish, Cabinet work, Agricultural Implements, Wagons, and general joinery.

Takes all sizes of Chain Saw from  $\frac{1}{4}$  to 1 in. wide. Price includes one size

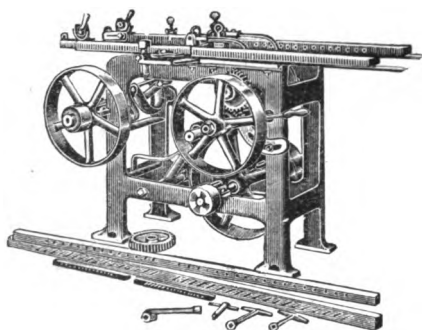


FIG. 5132.

### AUTOMATIC BLIND STILE MORTISING AND BORING MACHINE.

The machine is perfectly automatic. Feed Mechanism is positive. Will mortise and bore two stiles at one operation. Machine is provided with a Quick-acting Positive Clamping and Gauging device, which is convenient, saves time and avoids mistakes. An extra Gear is furnished to change feed for either hard or soft wood. Price includes one set Mortising Bits, one set Boring Bits, Spacing Bars and necessary Wrenches.

Price, \$127.50; weight, 600 lbs.

## TENONING MACHINES.

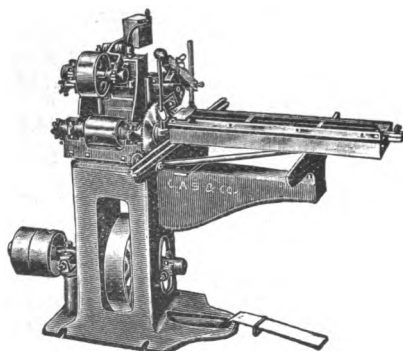


FIG. 5133.

### IMPROVED CABINET & SASH TENONING MACHINE WITH ROLLING CARRIAGE.

An especial feature of this machine is, that the Cut-off Saw operates first on the work, leaving tenons smooth and clear at the ends. Work is all done on

the forward run of the table. Table receives stock up to 16 in. wide. The weight of table and work is carried on four Anti-friction Rollers, Roller Tracks are protected from shavings and sawdust, movement of table is very easy. As usually made, Heads cut 3 in. wide, but they can be made wider if necessary. The Stop Gauge is simple and effective, will take from 3½ in. long, and Extension Bar may be made to take 6 ft. if ordered.

Price, with Cut-off Saw, \$148.75; with 1 Cope, \$170.00; with 2 Copes, \$182.75. Weight, 850 lbs.



FIG. 5134.

### NEW STYLE NO. 2 TENONING MACHINE.

This machine is adapted for tenoning Doors, Sash, Blinds and Furniture work. Will cut a tenon from ¼ to 7 in. long at one operation. The Cut-off Attachment is adjustable to any length tenon desired, without stopping. The Fence is adjustable to any required angle. The top stock has horizontal adjustment, to allow shoulders to be cut at uneven distances from the end. Both Head Stocks can be moved up and down without changing thickness of tenon. Table has Improved Anti-Friction Rollers.

Single Head, no Cope.....	\$140.00
“ “ 1 “ .....	150.50
“ “ 2 “ .....	157.50
Double “ no “ .....	150.50
“ “ 2 “ .....	168.00
Cut-off Saw Attachment, 10.50	

Weight, 1200 lbs.

## NO. 3 TENONING MACHINE.

This machine is quite similar to the foregoing, but somewhat lighter, the weight being 750 lbs. Is used for Sash and Blinds, and other purposes as well.

Single Head, no Cope.....	\$119.00
“ “ 1 “ .....	129.50
“ “ 2 “ .....	136.50
Cut-off Saw Attachment,	10.50

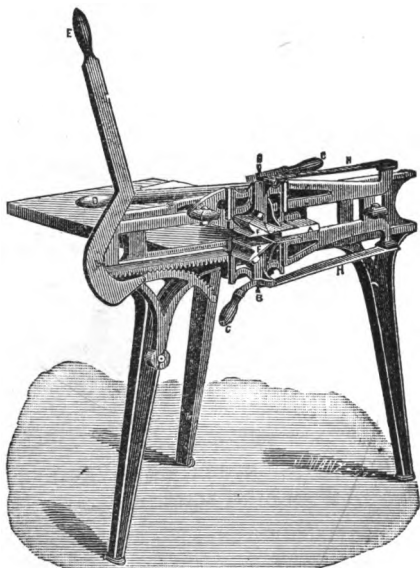


FIG. 5135. HAND TENONING MACHINE.

This machine will cut tenons of any length up to 3 in., and by repeating the cut any desired length can be made. It will not cope the shoulder, but will cut one shoulder further back than the other; or will cut one shoulder deeper than the other if desired. Either both or one side only can be cut. Each thrust of the lever cuts a shaving, the rapidity of the thrusts governing the speed of the work.

Price, \$25.00; weight, boxed, 140 lbs.

## COPE HEADS.

We show elsewhere in this book (see Index) a Patent Cope Head which will be found an excellent article.

## CHAIR BACK TENONING MACHINE.

This machine is the latest improved. No. 1 takes backs  $1\frac{1}{2}$  to 7 in. wide; No. 2 from 2 to 12 in. wide. Stops are arranged so that backs may be relished on one, both or neither edge. Price includes Countershaft, 4 Heads and Cut-off Saw

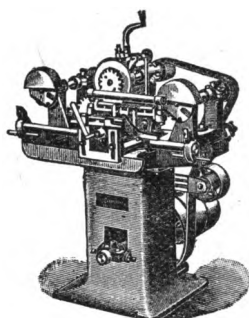


FIG. 5136.

No. 1 Machine, \$212.50; weight, 1000 lbs.

No. 2 Machine, \$243.00; weight, 1200 lbs.

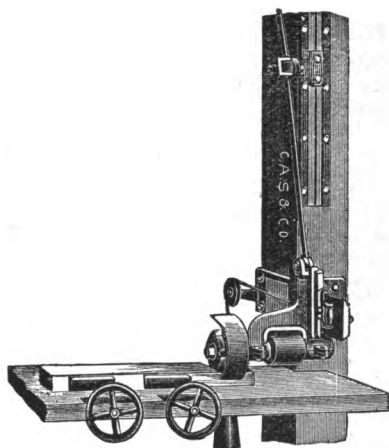


FIG. 5137. PATENT GAINING OR CROZING MACHINE.

This machine is valuable in Tank and Vat factories for crozing, and also if desired, for cutting off staves; will cut in a perfect circle of any radius, or to suit any diameter of tank. This machine will cut a croze up to 3 in. wide, or even more if desired, and to any depth either in round or square work. We can furnish any style of Cutter Heads, and also if desired, a saw for cutting off the staves. Price of the machine includes Countershaft and Wrenches. Price, \$125.00.

## SHAPERS OR FRIEZERS.

We show here two styles of Single Spindle Shapers. Although somewhat different in construction, they are of the same general type, both using the Friction Reverse, which is now generally conceded to be a great improvement over the old style.

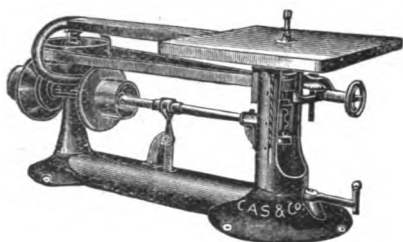


FIG. 5138. REVERSIBLE SHAPER.

This is a strong built machine, with many new improvements. The column is cast open in order that the operator may have free access to the working parts. An important feature is the Frictionless Collars, lined with ball bearing. With each machine is furnished one Expansion Head, which will admit cutters  $2\frac{1}{4}$  in. wide. This Head is convenient for all shapes of cutters, and can be removed from spindle without displacing cutter. We also furnish 33 Guide Collars, and one set of Groove Flanges. Size of Table, 33x36 in.

Price of Machine, \$120.00; weight, 1200 lbs.

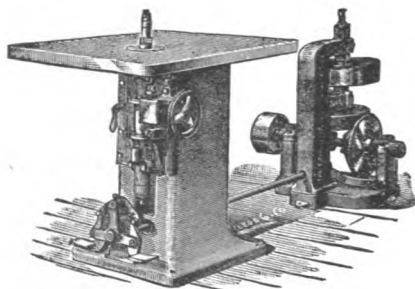


FIG. 5139. REVERSIBLE SHAPER.

This machine is of new design; the frame is cast in box form, and is heavy

and rigid. Spindle is of cast steel,  $1\frac{1}{4}$  in. diam.; the journals are 6 in. long. Table is usually of Iron (Wood Table furnished if ordered).

The Shifter Pedal is Self-locking and Self-releasing.

With each machine are furnished 1 Detachable Upper Spindle Section, 9 Guide Collars, 1 Table Ring, 1 pair Plain Knives or 1 Reversible Cutter, 5 ft. of Shifter Shaft with Attachments.

Price, Iron Table, \$127.50, weight 1000 lbs.; Wood Table, \$121.50.

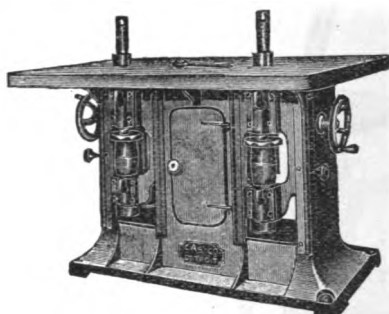


FIG. 5140.

## DOUBLE SPINDLE SHAPER & VARIETY MOULDING MACHINE.

These machines have been redesigned and improved during the past year. An advantageous feature is the Ball Bearing Step which reduces friction to a minimum.

No. 0 machine is very heavy, and is designed more especially for Car or Wagon Shops. Spindles are of 2 inch steel; length of Bearings 8 and 6 in. respectively, top and bottom.

Table is of Iron, 46x55 in. Distance between spindles 28 in. Price includes Plain Countershaft, and one set of each, 2 and 4 in. Steel Collars. For Double Countershaft add \$10.00.

Price, No. 0 Machine, \$165.00; weight 1400 lbs.

No. 1 Machine is practically the same as No. 0, excepting that it has  $1\frac{1}{4}$  in. spindles 26 in. apart, top 46x53 in., and one set of each,  $1\frac{1}{4}$  and 3 in. Steel Collars. Price No. 1 Machine, \$155.00; weight, 1250 lbs.



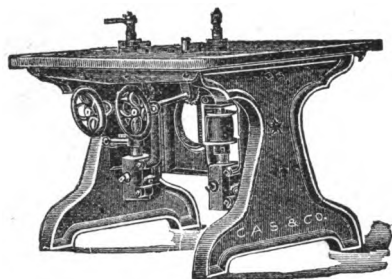


FIG. 5141. DOUBLE VARIETY SHAPER.

These machines are not so late a design as the others, but are thoroughly practical, convenient and well made. The Wood Tops on machine are made from well-seasoned hard wood glued up from 2 in. square stuff.

No. 2, Wood Top, \$125.00; Iron Top, \$132.00. Spindles  $1\frac{1}{2}$  in. steel, 24 in. between spindles. Top 44x48, and one set of each,  $1\frac{1}{2}$  and 3 in. Steel Collars. Weight, Wood Top, 800 lbs.; Iron Top, 1100 lbs.

No. 3, Wood Top, \$115.00; Iron Top, \$120.00. Spindles  $1\frac{1}{2}$  in. steel, 22 in. between spindles. Top 40x45 in., and one set of each,  $1\frac{1}{2}$  and  $2\frac{1}{4}$  in. Steel Collars. Weight, Wood Top, 700 lbs.; Iron Top, 1000 lbs.

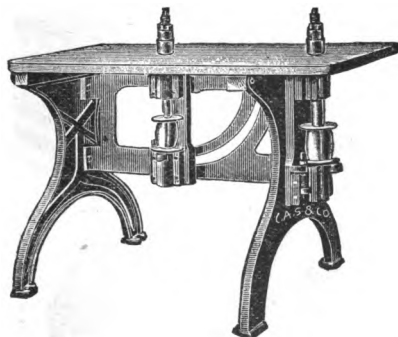


FIG. 5142. COMBINATION SHAPER, SAW AND JOINTER.

This machine can be used for a great variety of purposes, as a Shaper, Rip or Cut-off Saw, Hand Planer, Dado Machine, etc. The Spindle near center of machine can be set perpendicular, horizontal, or at any angle. The Spindle and Boxes at end of machine can be removed. Spindles are raised or low-

ered by means of a screw; Table is hinged at the back, has screw and hand wheel for raising it in front. Price includes Countershaft.

Price, with 1 Spindle, \$75.00; with 2 Spindles, as shown in cut, \$100.00.

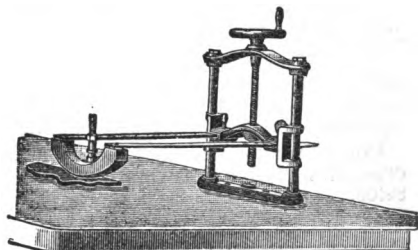


FIG. 5143. SHAPER GUARD.

This Attachment can be bolted to Shaper Table back of the Spindle, and will be found a very valuable feature.

Price, \$6.25.

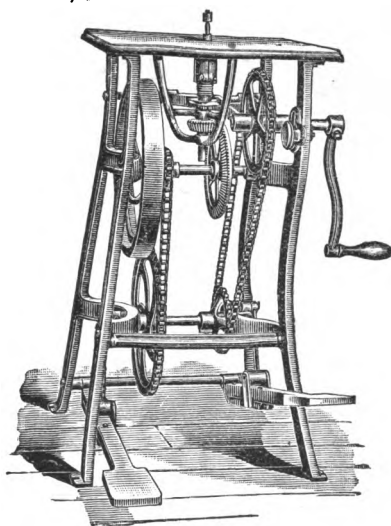


FIG. 5144. SMALL SHAPER.

This Edge Moulding or Shaping Machine is designed for the use of Carpenters, Cabinet Makers and all Wood Workers who desire to finish straight, curved or irregular work with moulded edges. It is a strong, well made machine, has been improved within the past few months, and is usually used by hand or foot power, but can be arranged to

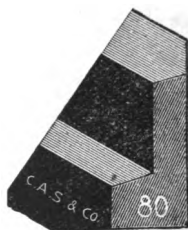
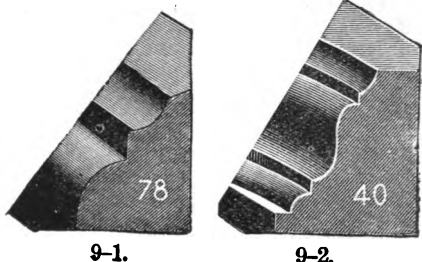
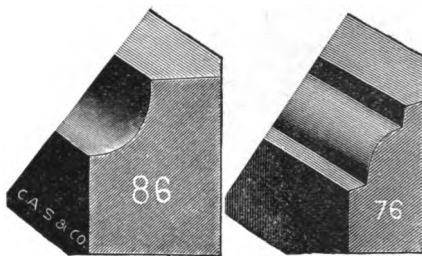
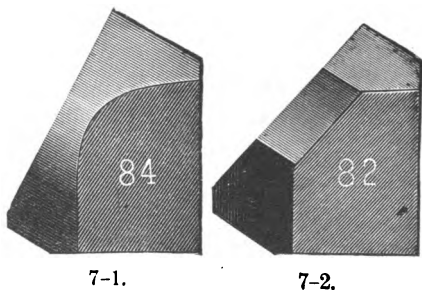
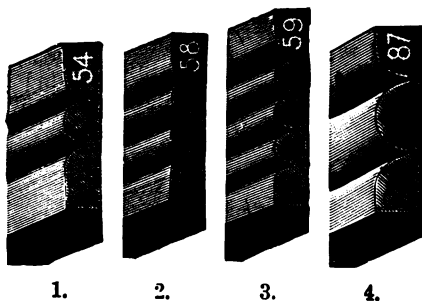
use with power. Cutters up to 1½ in. face can be used. Spindle is easily adjusted up and down, and may be run either way to suit the grain of the wood.

No. 1 Machine, \$27.00, complete as shown in cut (price does not include any Cutters). Shipping weight 250 lbs.

Pulley for Power, \$2.00.

No. 4 Machine, for Power only, same as No. 1, but without the hand and foot power, with Pulley on intermediate shaft and countershaft. Price, \$27.00.

Countershaft (arranged for open and crossed belts for reversing motion), \$9.00.



11. Section of Sash Rail.

FIG. 5145.

The above cuts illustrate the most commonly used styles of Cutters. These are not the thin sheet steel Cutters, but are made of solid stock, and have, since April 1, 1897, been improved in form. They are reversible, will cut either way, and should always be sharpened on the inside. Price, each, \$1.50.

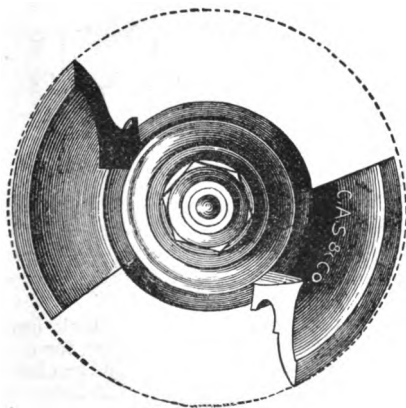
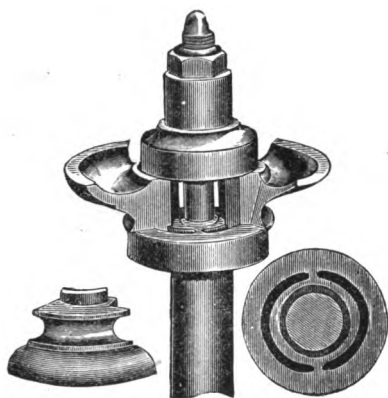


FIG. 5146. SHAPER CUTTERS.

The above illustration shows Cutters for Double Spindle Shapers. These Cutters work on the same principle as a gear cutter with relieved teeth. Grooves are eccentric to center of collars, thereby the cutting edge is thrown forward, thus giving them clearance, as shown by dotted lines in cut.

Cutters have tongues turned upon each end, which fit into corresponding grooves in the collars. All cutters are made to fit the same collars, so that one set of (4) collars is all that is necessary for any number of Cutters.

In ordering, send a Collar which fits the Spindle perfectly, as it is important

that the Collars fit well. Also send Drawing or Sample of Moulding which bits are to cut.

We print list of sizes covering most work. Can make Cutters as large as 10 in. diam. and 5 in. high.

Prices per set of 4 Cutters, 2 Right and 2 Left Hand:

For $\frac{1}{2}$ in. stuff, to cut $\frac{1}{2}$ deep,	\$5.60.
" $\frac{3}{4}$ " " " " $\frac{3}{4}$ " "	6.25.
" 1 " " " " 1 " "	7.80.
" $1\frac{1}{2}$ " " " " $1\frac{1}{2}$ " "	9.35.

Price of complete set of 4 Collars (2 Right Hand and 2 Left Hand), \$13.75. These Collars are of cast steel and serve for all shapes of bits.

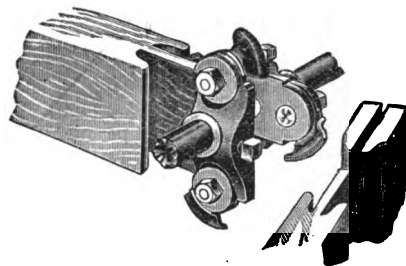


FIG. 5147. PATENT COPE HEADS.

These Heads are for use on the Cope Attachment of Tenoning Machine. The Cutters are sharpened by filing the front face, and will retain their original shape until worn out, thus effecting a great saving in time of filing and fitting, will also cut easier and smoother than any other style. Cutters can be replaced by others of different shape, the one pair of heads serving for any cutters desired.

In ordering, state size of hole and diameter of Head desired, also send drawing or sample piece of the Stile that the Cope piece is to fit to..

Price of Heads per pair, \$12.50.

## CUTTERS PER SET OF FOUR.

Height.	Depth.	Price.	Height.	Depth.	Price.
$\frac{1}{2}$	$\frac{1}{2}$	\$6.90	$\frac{1}{2}$	$\frac{3}{4}$	\$7.90
$\frac{3}{4}$	$\frac{3}{4}$	7.50	1	$\frac{3}{4}$	8.10
$\frac{1}{2}$	1	7.70			

## SHAPER ATTACHMENT.

This machine was especially designed for Fluting, Beading, and Ornamenting Columns, Newel Posts, Corner Blocks, Balusters, Rosettes, etc. It can be used on any ordinary Shaper, either single or double head, where knives can be set 5 in. above Shaper table. The diameter of stock which can be worked depends on the height of knives. There is no limit to length, as the head and tail blocks can be placed on a base of any length. The device is quite simple; can be placed in operation in less than fifteen minutes, and requires but little experience to run properly. Considering the great variety and amount of work it will do, the price is exceedingly low.

A complete outfit consists of Head and Tail Stock, 3 Spacing Plates, with which 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 24, 28, 40 and 48 lines can be made; 2 Bases, one for long and one for short work; 40 inches of extra Knife Steel (assorted widths), one set Knife Collars for Shaper, and a Wrench.

Price for complete outfit, \$39.00.

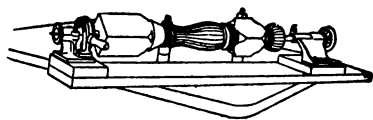


FIG. 5148.

Fig. 5148, as used on Shaper for Fluting or Beading Straight, Tapered or Swelled work.

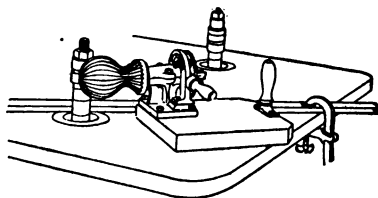


FIG. 5149.

Fig. 5149, showing Head Stock used on the Shaper, for Beading irregular Face Plate Turnings.

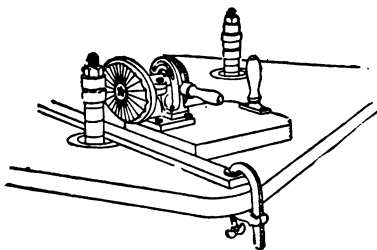


FIG. 5150.

Fig. 5150, showing Head Stock used on the Shaper for cutting a Medallion; same method used for cutting Rosettes, Corner Blocks, Small Panels, etc.

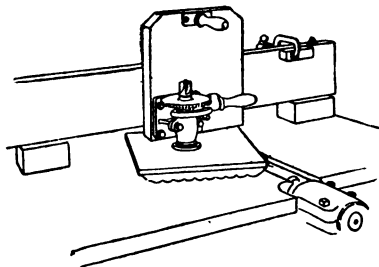


FIG. 5151.

Fig. 5151, showing Head Stock used on a Wood Worker or Jointer, for cutting large Sun Panels, Fans in Brackets, etc. Used only for work too large to swing on Shaper.

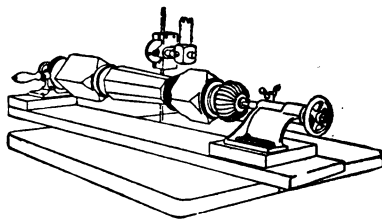


FIG. 5152.

Fig. 5152, Showing the device as used on a Band Saw, for cutting Square, Hexagon or Octagon Columns, Newels, etc. This class of work may also be done on a Shaper, using a pattern.

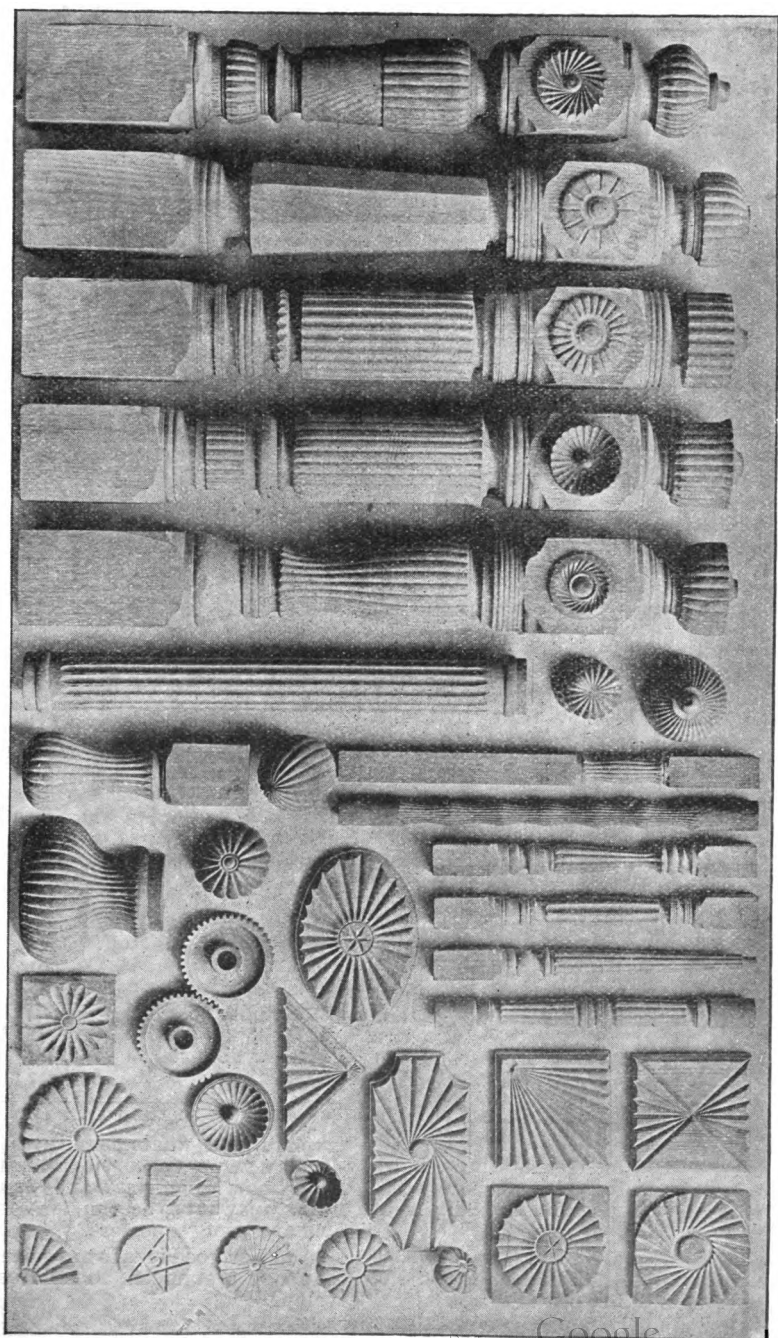


FIG. 5153.  
 showing a number of the designs that have been executed with this Attachment.  
 There is no hand carving on any of these.

## DOVE-TAILING MACHINES.

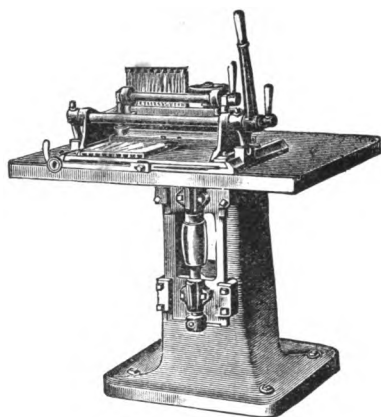


FIG. 5154.

DOVE-TAILING MACHINE.

This is a Compact and simple machine, easy and convenient of operation; a move at the one lever accomplishes all. Machine is suitable for any thickness from  $\frac{1}{4}$  to  $1\frac{1}{4}$  in. hard or soft wood. In an actual test the 13 in. machine has dovetailed 400 drawers, 8x6 inches, in ten hours.

No. 1 Machine, \$165.00; dove-tails 13 in.

No. 2 Machine, \$173.00; dove-tails 15 in.

No. 3 Machine, \$185.00; dove-tails 17 in.

Any of these machines can be used as a Shaper. In this case, we supply it with Patent Friction Reverse, similar to that shown in Fig. 5139, at extra expense.

## DOVE-TAILING ATTACHMENT.

This is the same mechanism as shown on above machine, and can be fitted to almost any Single Spindle Shaper at small expense.

No. 1, dove-tails 13 in., price \$70.00; No. 2, dove-tails 15 in., price \$80.00; No. 3, dove-tails 17 in., price \$90.00.

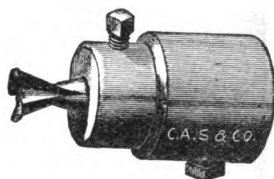


FIG. 5155.

DOVE-TAIL CUTTER AND STEEL CHUCK.

Dove-Tail Cutters, \$1.00 each; Steel Chuck, \$4.00.

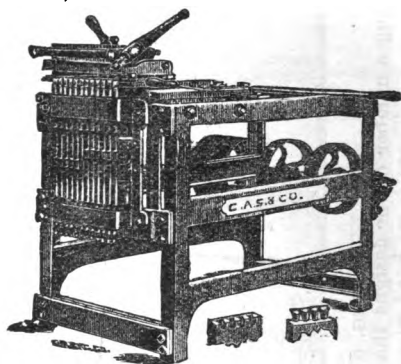


FIG. 5156.

GANG DOVE-TAILING MACHINE.

The cut represents a new Dove-Tailing Machine, which has the advantage of completing a corner to a drawer front or side, at one operation. Spindles are driven by cut gears; carriage is operated with ease by a double lever; machine is made in four sizes, 9, 12, 15 and 24 Spindles, and will dove-tail any width up to 8, 11, 14 and 23 in. respectively, and will dove-tail stuff from  $\frac{3}{8}$  to 1 inch thick. Price includes Countershaft and full set of Bits.

9 Spindle Machine,	\$194.50;	800 lbs.
12       "       "	220.00;	900   "
15       "       "	261.00;	1200  "
24       "       "	517.00;	1500  "

NOTE—If you will take the pains to explain your wants as fully as possible it may save us considerable trouble. You know what you want—or at least what you want to accomplish—we don't, and are poor "guessers."

Another good idea is to—sometimes—inclose a stamped, self-addressed envelope.

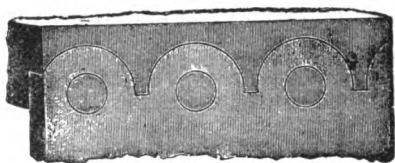


FIG. 5157. STYLE OF JOINT.

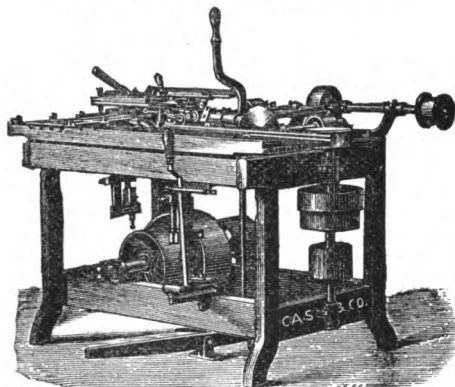


FIG. 5158, DOWEL JOINT MACHINE.

This machine is used extensively for making drawers for cabinet work, and makes a beautiful, strong joint. Machine consists of Cut-off Saw, Hollow Bit for forming, Bit for making the holes for pins, and Cutters for making curved joint.

Fig. 5157 shows style of Joint.

Price of Machine, complete with Countershaft, \$250.00.

## PANEL RAISING MACHINES.

There are many styles of Panel Raisers in the market. We show here two different types, each being the best of its particular style.

These machines will produce absolutely smooth work on all kinds of hard, soft or cross-grained woods. They raise the panel and chamfer the corner of tenon ready to fit into the groove, leaving no ridges or sharp corners to be hand planed or sand papered.

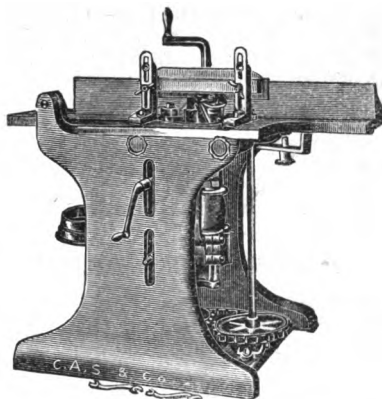


FIG. 5159.

### NO. 2 POWER FEED PANEL RAISER.

This machine, like the other, is of new design. It is, we believe, easily the best Panel Raising Machine in the market. Will raise any style of panels from  $\frac{1}{4}$  to  $3\frac{1}{2}$  in. without change of heads or cutters. If desired, an Ogee can be raised on one side, a Bevel on the other. The long or spiral cutters that raise the tenon have a shear or draw cut. The cutters are made circular, and will give more wear than any other style of knives. The machine produces perfectly smooth work, requiring no further preparation for oiling. Cutters are interchangeable, and any style of panel can be made by changing circular cutters without changing the tenoning knives. Price of machine includes Countershaft, one set of Heads, with two sets of Top Circular Cutters, Wrenches, etc., etc. Price, \$150.00.

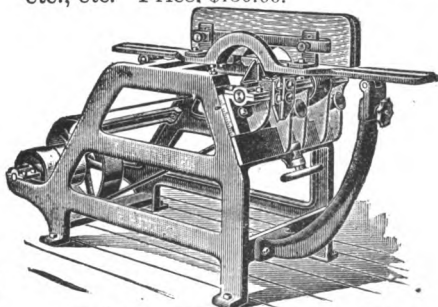


FIG. 5160. NO. 1 PANEL RAISER.

This machine uses the Acme Panel Head. It raises the panel and cham-

fers the corner of the tenon ready to fit into the groove. The heads are taken off or put on the spindle by loosening up one screw and removing the outside bearing. The Graduated Screw indicates exact depth of tenon, which can be changed at any time while machine is in motion.

Price, complete with Countershaft, Heads, Knives and Chamfer Cutters, \$120.00.

### PANEL RAISER HEADS.

We can furnish Panel Raiser Heads, similar to those used on these machines, which can be used on other styles.

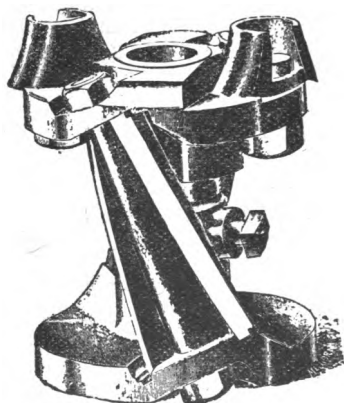
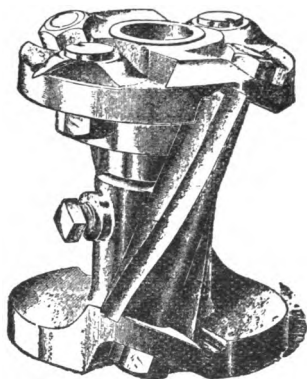


FIG. 5161. NO. 2 PATENT COMBINATION PANEL RAISER HEADS.

These Heads are furnished with machine, Fig. 5159; can be fitted to other

machines. The long or spiral cutters that raise the tenon have a Draw Cut, the other cutters are Circular, and will outwear from two to four sets of any other style. Cutters are interchangeable, and will make any style of panels by changing circular cutters without changing tenoning knives.

Price, complete with 2 sets of Cutters, \$33.00.

Ogee, Bevel, Cove, or Ovolo Cutters, per set, \$6.40.

Hip Cutters, per set, \$9.00.

Spiral Knives, per set (4), \$9.00.

Straight Knives, per set (4), \$4.25.

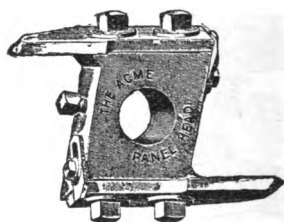


FIG. 5162. NO. 1 PANEL HEAD.

This is the style of Head furnished with machine Fig. 5160. Can be used on almost any machine and will be found very satisfactory.

Head, complete with Knives and Chamfer Cutters, to raise to 2 $\frac{1}{2}$  in., per pair, \$18.00; to raise to 4 in., per pair, \$22.00.

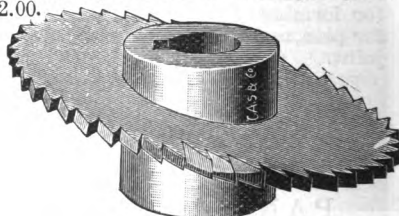


FIG. 5163. WABBLE SAW.

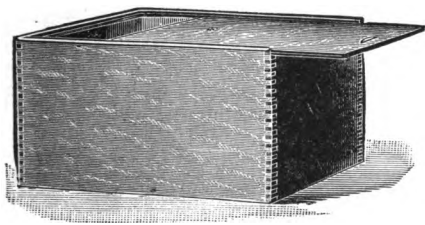
Used on Glue Jointers, Shapers, Moulders or Stickers, in fact, almost where any cutter can be used. Will do smooth work on any kind of lumber; are made to cut V and Straight Joints, Ovals, Bevels, Mouldings or Beading. Many classes of work can be done with this Saw that cannot be accomplished satisfactorily with any other tool.

Prices vary according to the sizes and shapes of Saws.

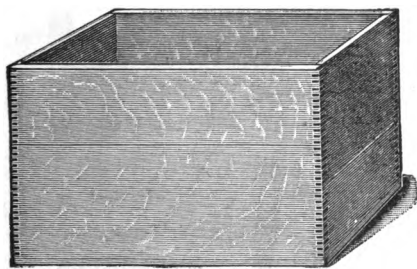
In writing or ordering, send drawing or sample of work to be done.



## LOCK CORNER BOX MACHINERY.



We are prepared to furnish Machinery for making Lock Corner Boxes. These Boxes are used very extensively from the smallest sizes up to the medium and large Boxes, such as are used for Soap, Canned Goods, Shoes, etc. Machinery for this work is rather expensive, but the product is turned out rapidly and at very little cost. The above cut represents a crayon Box  $3\frac{1}{2} \times 4\frac{1}{2} \times 6$  in., made of  $\frac{1}{4}$  thick stock. On the Lock Corner Cutting Machine 20,000 of such boxes have been made in a day. On the Setting-up Machine 5000 Soap or Canned Goods Boxes have been put up in a day. The machinery consists of:—



Lock Corner Cutting Machine, made in two sizes: No. 8, \$1,300.00, weight 5000 lbs. for Medium and large boxes; No. 4, \$875.00, weight 3000 lbs., for medium and small boxes, say up to 20 inches in length.

Setting-up Machine No. 1, \$540.00, weight 2600 lbs., for boxes from  $4 \times 5$  to  $18 \times 26$  in.; No. 2, \$650.00, weight 3600 lbs., for boxes from  $7 \times 9$  to  $30 \times 40$  in.

Box Corner Trimming Machine, \$225.00, weight 800 lbs., suitable for

dressing the ends and edges of either Lock Corner or Nailed Boxes.

While the above machines form practically a complete outfit for Lock Corner Boxes, we often furnish a No. 8 Nailing Machine for nailing on the bottoms. This machine will drive any number of nails from one to 8.

Price of Machine, \$490.00.

## BOX BOARD PRINTING MACHINES.

These Machines are used for printing the sides and ends of boxes, doing away with stenciling and pasting on of labels. The work is done faster, better and cheaper, sinking the letters below the surface, which prevents blurring by contact with the surface. Will print the ordinary kind of box stuff at the rate of about 2500 impressions per hour. Prints stock up to 42 in. long.

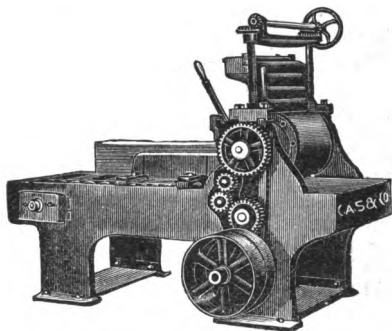


FIG. 5164.

### BOX BOARD PRINTING MACHINE.

For boards 12 in. wide, \$360.00; 14 in., \$384.00; 16 in. \$408.00; 18 in., \$432.00; 20 in., \$456.00; 24 in., \$552.00. Average weight, 2800 lbs.

Can furnish machine of this type for Two-Color work; cost about 60 per cent more. Circulars and prices upon application.

## BOX NAILING MACHINES.

We can furnish Box Nailing Machines of different styles for all kinds of work. In writing, please state plainly for what purpose machine is wanted.

## HOOP MACHINERY.

The manufacture of Hoops can often be carried on to good advantage in connection with other business. For making Hoops any timber that has a long, stringy fiber will answer. Oak, Ash and Elm are among the best. In our vicinity the two first named woods are rather scarce and high priced, so that nearly all the Hoops cut are of Elm, but in some localities the other woods are more plentiful and cheaper.

Two systems are in use in making hoops, the "Cut System" and the "Sawed System." The first machine in the "Cut System" is the Hoop Cutting machine; this is a strong, heavy machine, weighing about 5000 lbs., with a capacity of 45,000 hoops per day.

Price, \$722.00. (Not illustrated.)

The next machine is the Hoop Planer, with a capacity of 15,000 to 20,000 per day; weight, 1200 lbs. Price, \$277.75.

Then the Combined Hoop Pointer and Lapper, with a capacity of 40,000 to 50,000 per day. Price, \$444.00.

Finally the Hoop Coiler, with a capacity of 15,000 to 18,000. Price, \$166.75; weight, 1200 lbs.

In the "Sawed System" the first machine is the Improved 3-Saw Self-Feeding Rip Saw, which saws the planks into bars, and feeds in and out. Price, \$211.00; weight, 1500 lbs. (Not illustrated.)

Then the Hoop Sawing, Planing, Pointing and Lapping Machine, capacity 18,000 per day. Price, \$500.00; weight, 2500 lbs.

And finally the Hoop Coiler. We show here four of these machines.

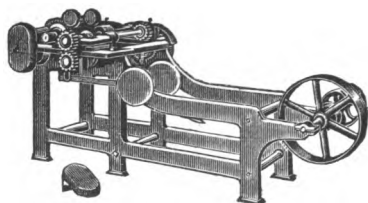


FIG. 5165. HOOP PLANING MACHINE  
("Cut" System.)

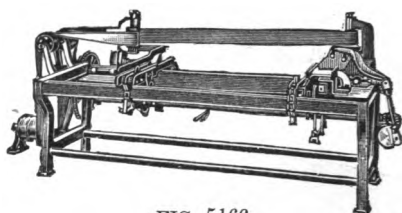


FIG. 5166.  
COMBINED HOOP POINTER & LAPPER.  
("Cut" System.)

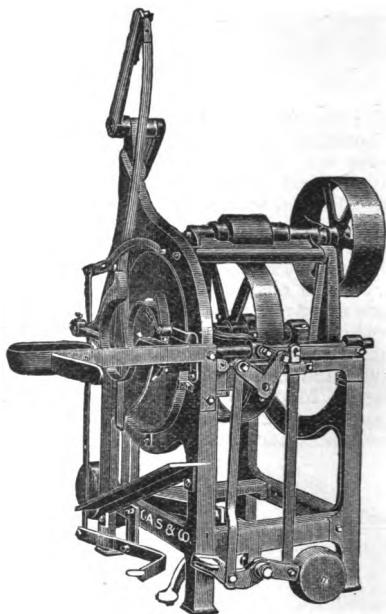


FIG. 5167. HOOP COILER.  
("Cut" or "Sawed" System.)

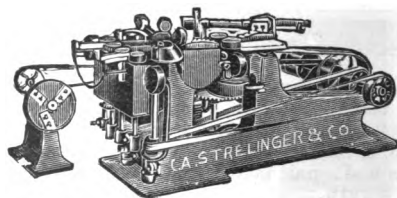


FIG. 5168. SAWING, PLANING, POINTING  
AND LAPPING MACHINE.  
("Sawed" System.)

Circulars containing full description of any or all of these machines will be furnished to any one upon application.

## VENEER MACHINERY.

The veneer-cutting machine has been the means of revolutionizing the light wooden package business, to say nothing of wooden plates, and similar goods. Every day the uses of the products of this machine increase. The thousands of tons of small fruits, peaches, grapes, etc., are nearly all shipped in packages made of thin-cut lumber—soft elm, sycamore, gum, etc., lumber only available for such uses because of the machine itself. When the era of wooden packages was first ushered in, the veneer-cutting machines were located in the cities, and lumber shipped from the saw mills. Experience has taught, however, that the most economical method is to manufacture the stock for these special uses at the saw mill. The machinery can be put in at no great cost and makes available at a profitable price, much timber otherwise comparatively worthless.

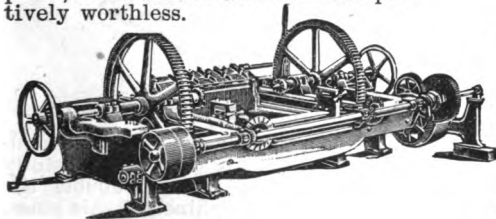


FIG. 5169.

### ROTARY VENEER CUTTING MACHINE.

This machine is recommended for cutting all kinds of Veneers from hard and soft wood. Veneers can be cut from  $\frac{1}{4}$  to  $\frac{1}{2}$  in. thick. Frame is low, logs being easily dogged without lifting more than 20 in. from floor.

The drive pulley is a patent friction clutch, which can be located at either end of the shaft, as ordered. In the cut it is partially shown at the extreme right-hand end. The Knife is mounted so as to secure the same advantages as an automatic change of pitch. Feed is regulated by a change of cut gears, to secure different thickness of Veneering. A rapid reverse feed is governed by the same lever which controls the cutting feed. Automatic safety stop attached to feed lever. Machine has capacity of about 25,000 lineal ft. per day. Floor space required, 8 ft. wide by 10 to 15 ft. long. The largest log that can be cut is 44 in. diam. Smallest core 4 in..

varies to 8 in. Shortest log without extension shaft, 20 in. less than length of knife.

Price, 28 in. Machine.....	\$500.00
" 34 " " .....	522.00
" 41 " " .....	545.00
" 48 " " .....	578.00
" 52 " " .....	589.00
" 62 " " .....	661.00
" 76 " " .....	906.00

Weight, 28 in., 6000 lbs.; 48 in., 6600 lbs.; 76 in., 9500 lbs.

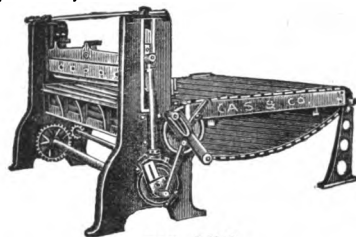


FIG. 5170.

### AUTOMATIC VENEER CLIPPER AND STAMPING MACHINE.

This is an all-round Basket Factory Machine for clipping out Veneer, Bands, Hoops, Slats, Panels, etc., and for stamping out Staves, Berry Boxes and irregular shapes. It is a heavy geared machine, and feeds automatically to 14 inches wide. The friction clutch drive pulley is operated from either end of the machine; an endless traveling table makes a practically solid bed upon which to sort the veneer. Floor space, 9 ft. long and from 4 to 7 ft. wide.

Price, 28 in. Machine.....	\$211.00
" 34 " " .....	222.00
" 41 " " .....	235.00
" 48 " " .....	250.00
" 52 " " .....	277.50
" 62 " " .....	333.00
" 76 " " .....	416.50

Weight, 28 in., 1400 lbs.; 48 in., 1600 lbs.; 76 in., 2200 lbs.

Attachments for cutting Staves, Berry Boxes, and other irregular shapes convert this machine into a powerful stamping machine, in which a great variety of shapes can be stamped automatically, several layers at a time.

Prices of Attachments will be made upon application.

## ROD AND DOWEL MACHINES.

NOTE.—On page 655 we show a small Lathe Dowel Tool, which will be found a very convenient device for turning out small quantities of light work.

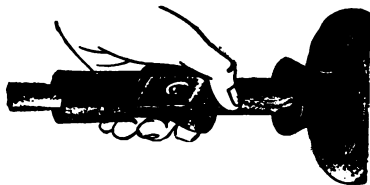


FIG. 5171. ROD CHUCK.

This is a simple device, to be used in connection with any Wood Turning Lathe; consists of 2 parts, the Cup Center for holding stick, and the Chuck for cutting. Cup Center holds all sizes square sticks, but a different sized Chuck is required for each size rod. The Chuck is held in hand, and pushed towards Cup Center as fast as knife will feed. Stick should not exceed 5 ft. in length.

Cup Center, \$0.80. Chucks  $\frac{1}{4}$ ,  $\frac{1}{2}$  or 1 in., \$3.00 each.

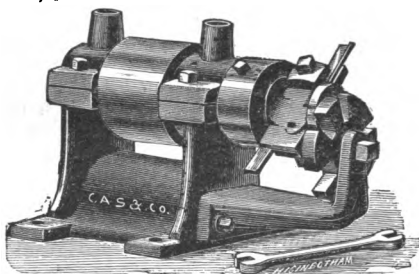


FIG. 5172.

### HAND FEED DOWEL MACHINE.

These Machines are made in three sizes. The Cutter Heads are threaded into the arbor, and a Stick Holder is provided to keep the stock from turning around. Price includes one Cutter Head of any size within the limits of machine.

No. 1, \$18.00; for sizes up to  $\frac{3}{4}$  in. inclusive.

No. 2, \$20.75; for sizes up to 1  $\frac{1}{2}$  in. inclusive.

No. 3, \$23.50; for sizes up to 1  $\frac{1}{2}$  in. inclusive.

Extra Heads, \$6.50 each.

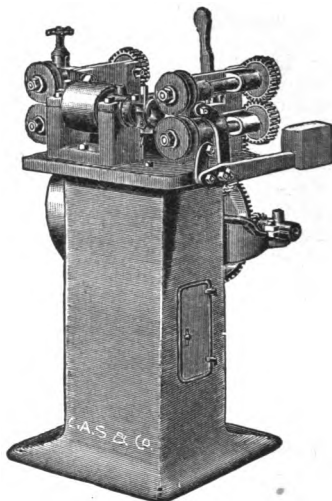


FIG. 5173.

### POWER ROD AND DOWEL MACHINE.

This is a machine of new and excellent design. The bearings are carefully ground, and are nearly double the length of most machines of this class. Feed works on Nos. 1 and 2 machines consist of 2 pair of Rollers, all driven; on No. 3, 3 pair, 4 of which are driven. The Feeding-in Rolls are self-centering, and will accommodate large variations in the rough stock, without wedging or stopping the feed. Gearing is reversible by means of a hand lever so as to feed out bad stock. 2 Cutter Heads and 2 sets (8) Feed Rolls with Nos. 1 and 2 machines, and 3 sets with No. 3. Price also includes Overhead Countershaft.

No. 1 Machine, \$122.50; capacity to 1  $\frac{1}{2}$  in. inclusive. Shortest length turn 16 in. Weight 775 lbs.

No. 2, \$146.00; capacity to 1  $\frac{1}{2}$  in. inclusive. Shortest length turn 18 in. Weight 950 lbs.

No. 3, \$170.00; capacity to 2 in. inclusive. Shortest length turn 20 in. Weight 1050 lbs.

Extra sets of Feed Rolls, \$5.40 to \$9.00. Extra Cutter Heads, \$6.50. Extra Knives, per pair, \$1.15.

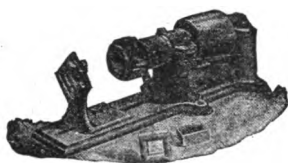


FIG. 5174. CHUCKING MACHINE.

This machine is for rounding the ends of Handles, Chair and Turned work, for turning Tenons on Handles and Ladder Rounds, etc..etc. In ordering, send sketch or sample of work to be done, and always give size of stick to be chucked.

Price of Arbor and Frame, \$10.00; Chucking Head, any regular style, \$6.00.

### ACME ROD AND DOWEL MACHINES.

The advantages claimed for these machines are, first, that they do very nice work, and second, on account of the cutters and feeding mechanism being adjustable, the user saves the cost of extra Head and Rolls for turning different sizes, as required on solid chuck machines.

The Cutter Head carries 4 cutters, which are adjustable and are set at a slight angle, thus securing a shearing cut. The Rod is supported within the Head by a projecting portion of the cutters. Sizes may be changed in a few moments; the adjustments are so simple that any bright boy can operate machine. The speed of Cutter Head should be 3500 to 4000 revolutions per minute.

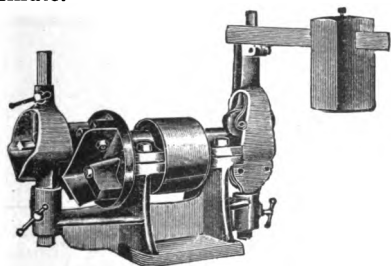


FIG. 5175. NO. 1 ACME ROD MACHINE. (Hand Feed.)

This machine is suitable for rods from  $\frac{1}{4}$  to 1 in. inclusive; has three changes

of speed, 12, 30 and 45 ft. per minute, according to size and quality of stock.

Machine complete, \$50.00; weight, 90 lbs. Countershaft, if desired, \$18.00.

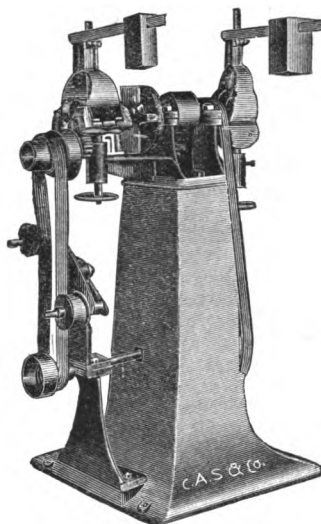


FIG. 5176. NO. 2 ACME ROD MACHINE. (Power Screw Feed.)

This machine is suitable for rods from  $\frac{1}{4}$  to 1 $\frac{1}{2}$  in. inclusive; has three changes of speed, 12, 30 and 45 ft. per minute. The steel feed screws are driven by steel gears, and engage with the square stock at four points. The rear rolls are not driven, but operate to prevent turned stock from revolving with the head, when tail end leaves the feeding screw; are controlled by a weighted lever, and are adjustable for size and tension.

Machine complete, \$125.00; weight, 400 lbs. Countershaft, if desired, \$18.00.

### ROUND DOWELS.

We carry in stock Round Dowels from  $\frac{1}{4}$  to  $\frac{1}{2}$  in. diam. (usually in lengths of 3 ft.). Prices vary according to quantity, and will be given upon application.

THIS BOOK is copyrighted and we caution all parties against using, without our written permission, any of the original matter contained herein.

## CARVING MACHINES.

These machines have practically displaced Hand Carving in the manufacture of fine furniture and cabinet work. When first brought out, the possibilities of the machines were but little realized, and the work performed was confined to what is known as "Surface" carving (see Fig. 5177). This class of carving is very simple and is only considered suitable for the cheaper grades of work.

In Fig. 5179 we show illustrations of Relief Carvings. The wood is sawed out to the desired pattern on the Band or Scroll Saw, and then finished on the Carver. The material is usually  $\frac{3}{4}$  to  $1\frac{1}{2}$  in. thick, a large portion of it small pieces, that ordinarily would find their way to the scrap pile.

In Fig. 5180 are shown samples of Table Carvings. This work is scroll sawed from stock  $\frac{3}{4}$  to  $1\frac{1}{2}$  in. thick, and finished on the Carving Machine. The ornamental work on top and bottom of Chair and Table Legs, and all similar work, can also be performed. With these machines the most satisfactory results can be obtained, at a very small expense.

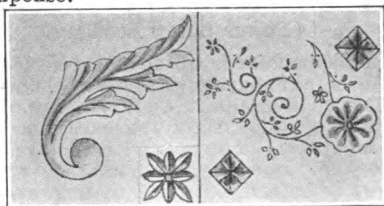


FIG. 5177. SURFACE CARVINGS.

(This is known also as "Old Style" carving. Can be done very cheaply and adds to the appearance of low-priced work.)

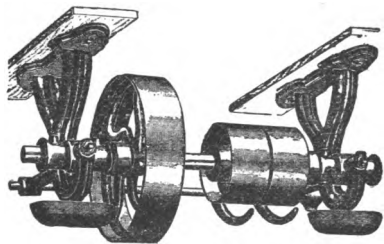


FIG. 5178. COUNTER SHAFT  
Counter Shaft for Sanding Lathe, Fig. 5183.

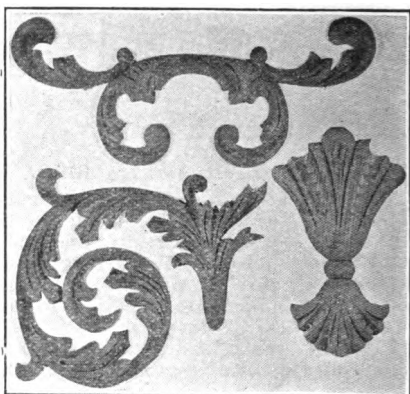


FIG. 5179. RELIEF CARVINGS.

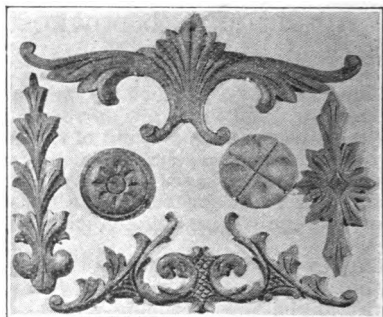


FIG. 5180. TABLE CARVINGS.

(These samples were carved in the presence of the writer. The length of bottom piece is 19 in. Time required to carve this piece was four minutes. The top piece is quite an elaborate bit of work; time required for this was eleven minutes).

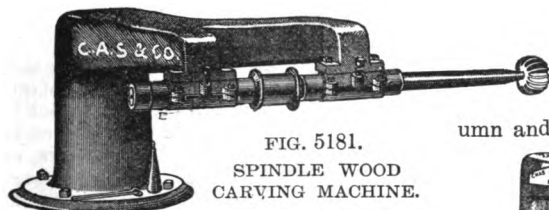


FIG. 5181.  
SPINDLE WOOD  
CARVING MACHINE.

The line of Spindle Wood Carvers presented here is somewhat different from the line shown in former catalogues. The design has been improved a little (there wasn't much room for improvement, as the machines shown in former catalogue were nearly perfect). We have added two sizes, and have discarded machine with Babbitted Boxes.

Babbitt Metal (if genuine Babbitt is used) makes excellent bearings for most purposes, but we find after much experience with Carving Machines, that the Bronze bearings last longer and give better satisfaction. These spindles should be run at from 7000 to 8000 turns per minute, for best results.

Prices include an Adjustable Countershaft. Weight of Countershaft 90 lbs.

No. 1 Machine, \$33.00; has  $1\frac{1}{4}$ " Spindle running in 6 in. Bronze Boxes. End of point 28 in. from column. Weight 120 lbs.

No. 2 Machine, \$35.50; has  $1\frac{1}{4}$ " Spindle, running in 6 in. Bronze Boxes. End of point 28 in. from column. Weight 130 lbs.

No. 3 Machine, \$40.00; this is the most generally useful size. We sell more of these than the others. Has  $1\frac{1}{4}$ " Spindle, running in 8 in. Bronze Boxes. End of point 30 in. from column. Weight 140 lbs.

No. 4 Machine \$48.00; has  $1\frac{1}{4}$ " Spindle, running in 8 in. Bronze Boxes. End of point 34 in. from column. Weight 160 lbs.

#### COLUMN CARVER.

The cut represents our No. 4 Machine mounted on a column. Can furnish any of the above machines in this way. The Column is a decided advantage over placing the machine on a wooden frame or bench. Table of any size to suit the operator can be placed upon the brack-

ets. For price of Column Machine, add \$9.00 to the Nos. 1 and 2 Machines, and \$10.00 to the Nos. 3 and 4 Machines. Weight of Column and Brackets 200 lbs.

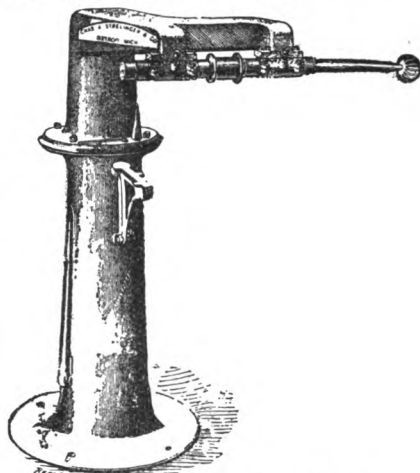


FIG. 5182. COLUMN CARVER.

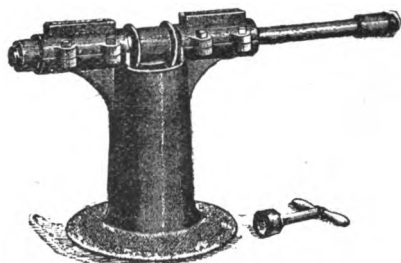


FIG. 5183. SANDING LATHE.

Designed for sanding Carvings, but will be found exceedingly useful for polishing the edges and sides of all kinds of Scroll work; in fact, if there is not a great deal of this class of work, it will answer as a substitute for a machine costing a great deal more. Has  $1\frac{1}{4}$ " Spindle with rubber and nut, which loosens or tightens the sand paper cylinders (usually a sheet of sand paper rolled up and glued together) by means of a wrench. Price, \$11.50; Countershaft, when desired, \$8.50 (see Fig. 5178).

*For Carving Machine Cutters see Next Page.*



FIG. 5184. CARVING MACHINE TOOLS.

LINER, DIAMOND, ROUND, HALF-ROUND  
FLUTING, HALF-FLUTING, OVAL,  
CONE OR ROUTER CUTTERS.

Diam.	THICKNESS.				%
	$\frac{1}{8}$ and 3-16	$\frac{1}{4}$ and 5-16	$\frac{3}{8}$ and 7-16	$\frac{1}{2}$ and 9-16	
1 in.	\$1.20	\$1.45	\$1.55	\$1.70	\$1.75
1 $\frac{1}{4}$	1.45	1.65	1.75	1.90	2.00
1 $\frac{1}{2}$	1.50	1.75	2.00	2.15	2.25
1 $\frac{3}{4}$	1.60	2.10	2.20	2.35	2.50
2	1.95	2.30	2.50	2.75	2.90
2 $\frac{1}{4}$	2.15	2.50	2.75	3.00	3.15
2 $\frac{1}{2}$	2.50	2.85	3.00	3.35	3.40
3	.....	.....	3.75	3.95	4.30
3 $\frac{1}{4}$	.....	.....	.....	4.60	4.90

Diam.	THICKNESS.				
	$\frac{7}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$
1 in.	\$1.85	\$2.05	\$2.20	\$2.55	\$2.85
1 $\frac{1}{4}$	2.10	2.25	2.40	2.80	3.15
1 $\frac{1}{2}$	2.35	2.50	2.70	3.15	3.45
1 $\frac{3}{4}$	2.65	2.80	3.00	3.40	3.75
2	3.10	3.25	3.45	3.80	4.25
2 $\frac{1}{4}$	3.35	3.65	3.85	4.30	4.80
2 $\frac{1}{2}$	3.75	4.00	4.25	4.70	5.30
3	4.60	4.90	5.25	5.70	6.50
3 $\frac{1}{4}$	5.30	5.60	5.90	6.85	7.90

Price Emery Chuck, \$1.50; Extension Point, \$1.20.

## SETS OF CUTTERS.

As a rule, we prefer that purchasers select their own Cutters, but many of our customers ask us to send them a Set to start with, and so we have arranged to furnish Sets of 8, 14 and 20 Cutters, as given in table below. These Cutters are selected as a result of extensive experience. Cutters may be exchanged for other sizes or styles, provided they have not been used, if returned within sixty days from time of purchase.

Set of 8 Assorted Cutters,	\$15.00
" "14 " "	28.50
" "20 " "	40.00

## ROUTING, ROUNDING AND ROSETTE MACHINE.

This machine is adapted to a great variety of work, such as rounding the edges of carved work, routing out work for the machine or hand carver, rounding the edges of scroll sawed work; can be used for Panel Raising, or cutting out for inlaid work. Is a most excellent machine for making Rosettes and Buttons, and will do a great variety of work that is usually done on a Shaper.

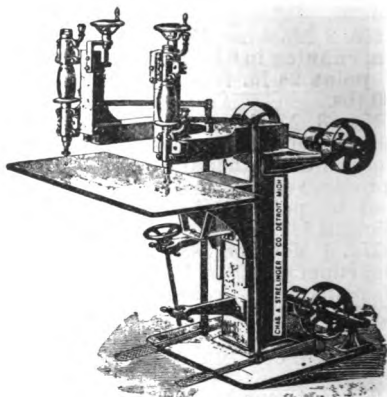


FIG. 5185. NO. 1 MACHINE.

This is the lightest machine that we have. Table is of Iron, 16x40 in. Price includes 3 pair of Cutters.

Price, No. 1 Machine, \$75.00; weight 600 lbs.



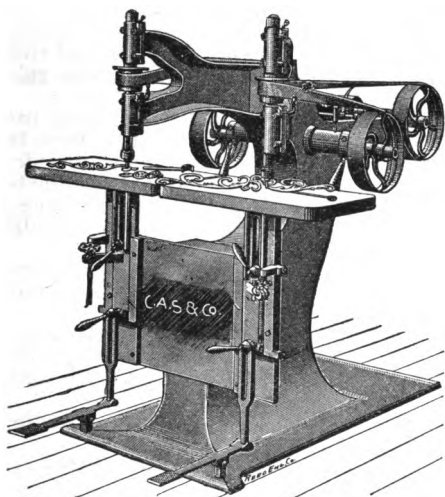


FIG. 5186. NO. 2 MACHINE.

This is the medium sized Machine and the one we sell the most of. Is very strong and substantial. Price of machine includes 2 pair of Cutters.

Price, \$110.00; weight, 1100 lbs.

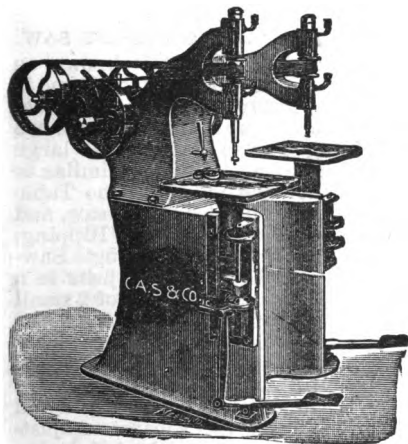


FIG. 5187. NO. 3 MACHINE.

This is, we believe, the strongest machine of this class on the market. Price includes 3 pair of Cutters.

Price, \$140.00; weight, 1300 lbs.



FIG. 5188.

## ROUNDING AND ROSETTE CUTTERS.

Diam.	Price.	Diam.	Price.	Diam.	Price.
$\frac{1}{2}$	\$2.20	$1\frac{1}{2}$	\$3.40	$2\frac{1}{2}$	\$6.60
$\frac{3}{4}$	2.25	$1\frac{3}{4}$	4.00	$2\frac{3}{4}$	7.15
1	2.50	2	5.00	3	8.05
$1\frac{1}{2}$	3.00	$2\frac{1}{2}$	5.85	$3\frac{1}{2}$	9.15

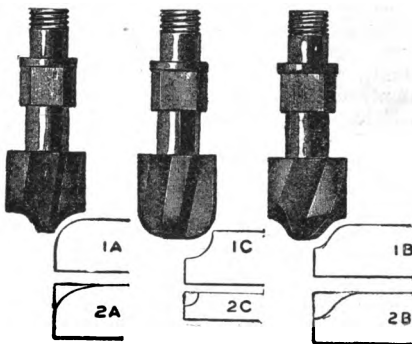


FIG. 5189. EDGE Moulding BITS.

Diam.	Each.	Diam.	Each.	Diam.	Each.
$\frac{1}{2}$	\$1.05	1	\$2.00	$1\frac{1}{2}$	\$3.90
$\frac{3}{4}$	1.25	$1\frac{1}{4}$	2.40	2	5.00
$\frac{1}{2}$	1.55	$1\frac{1}{2}$	3.00		

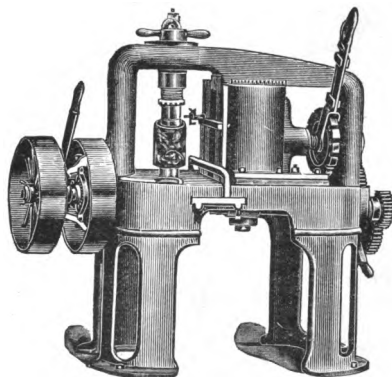


FIG. 5190. DROP CARVING MACHINE.

Figs. 5190 and 5191 represent a Drop Carving Machine and sample of Work.



FIG. 5191. SAMPLE OF WOOD CARVING. On this machine carvings of any design are produced at the rate of about 50 ft. per hour complete, including Sanding and Scroll Sawing. Carvings may be of any thickness from  $\frac{1}{4}$  to 1 in.

In use by many of the leading Furniture, Piano, Chair makers, etc., who use Carvings in large quantities.

Price given is for Machine alone, the Dies costing from \$15.00 to \$30.00, depending on the size, amount of ornamentation, and labor expended.

Price, \$700.00; weight, 2500 lbs.

## COMBINATION MACHINES.

Under this heading come machines that are given all sorts of names by the different manufacturers, such as "Universal Wood Worker", "Variety Wood Worker", "Universal Saw and Dado Machine", etc.

In many cases the use of these various styles of machines will be found advantageous, saving in first cost of machine, cost of belts, also floor space.

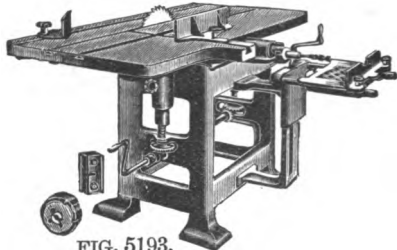


FIG. 5193.

### UNIVERSAL SAW AND DADO MACHINE.

This machine is designed for Sawing at any angle, Plowing, Grooving, Dadoing, Jointing, and Boring. Used largely in Sash, Door and Blind Factories, Cabinet, Pattern-making and Job shops, Furniture, Wagon and Carriage factories. The Table is 63 in. long and 30 in. wide. Will rip stock between gauge 20 in. Saws up to 18 in. diam. can be

used. The Ripping, Cross-cutting and Mitering Gauges are well fitted in table. The Sliding Tables on each side of the saw are adjustable to admit either the Dado or Jointing Heads.

The Jointing Attachment has an independent, adjustable Table that is raised or lowered by means of the crank. Boring Attachment has every adjustment needed to do Boring, Routing, making Rosettes, etc. Prices include Countershaft. Weight, 1250 lbs.

No. 1, \$160.00, with Dado Head, Boring and Jointer Attachments, Rip and Cut-off Saws.

No. 2, \$140.00, with Jointer Attachments, Dado Head, Rip and Cut-off Saws.

No. 3, \$120.00, with Dado Head and Saws.

No. 4, \$120.00, with Boring Attachments and Saws.

No. 5, \$100.00, Machine with Saws.

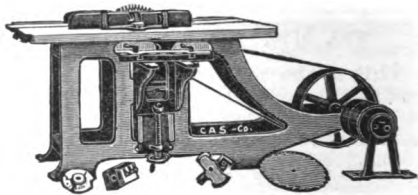


FIG. 5194.

### UNIVERSAL RIP AND CROSS-CUT SAW.

This machine is what is known as "Variety" Wood Worker. The frame is of iron, very heavy, cast all in one piece, with Countershaft attached. There are two Sliding Tables fitted in the large table, which can be adjusted similar to a hand planer and jointer. The Table has slots on both sides of the saw, and is furnished with 3 Gauges, for Ripping, Cross-cutting, and Miter or Angle Sawing. The Ripping Gauge adjusts in a box, bolted to table by means of 2 small Hand Wheels. The Gauge and Adjusting Bar can be quickly removed, leaving the table clear for cross-cutting, etc., its entire width.

The Boring Attachment is rigid and strong; the Table has separate Adjustments, and is fitted with Adjustable Gauge to bore at any angle.

The Jointing Head is slotted on four sides so as to use any kind of Bits; Gaining, Grooving, Panel Raising, Tenoning and other Heads can be used.

Price complete, \$191.25; this includes

one 16 in. Rip and Cross-cut Saw, one 6 in. Four-Sided Head with pair of Knives.

Price of Machine with Jointer Attachments only, \$168.00; with Boring Attachments only, \$160.00.

Price of Plain Machine, \$127.50; weight complete, 1600 lbs.

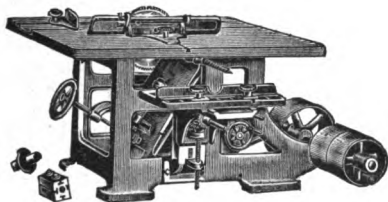


FIG. 5195. NO. 2 UNIVERSAL RIP AND CROSS-CUT SAW.

This machine is practically the same as the foregoing, only a little different in design. Our main reason for showing it is, that we can furnish a Self-Feed Ripping Attachment which cannot be supplied with the other machine.

Price of Machine, \$195.00; weight, 1560 lbs.

Price of Self-Feed Ripping Attachment, extra, \$45.00.

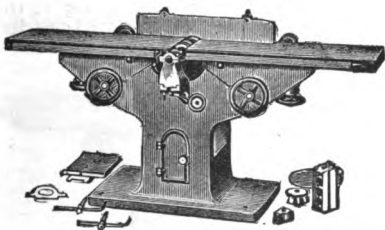


FIG. 5196.

NO. 1 UNIVERSAL WOOD WORKER.

Is designed to do the same class of work as described under Fig. 5197; is strong and substantial. The Tables are long, each being 34 ft. in. length. Are raised and lowered by large hand wheel shown in front of machine, and are moved to and from the mandrel by hand wheels on other side. The Fence is 4 ft. long, is arranged to be set to any angle, and can be swung across the machine for diagonal cuts. Can also be adjusted to full width of table, which is 18 in. The mandrel will carry a 12 in. head, although we furnish a 10 in head with machine. Mandrel can be moved by

the small hand wheel shown in front, so as to make a slight adjustment without moving the fence.

Boring Attachment is fitted to machine, and is provided with all adjustments.

Price of Machine, \$255.00, including Countershaft, 12 in. Saw, 10 in. Slotted Steel Head, Rabbeting Head, and Jointing Head. All Heads have Knives. If Boring Attachment is not desired, deduct \$20.00 from price. Weight 1700 lbs.

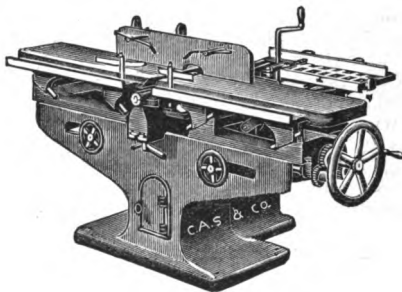


FIG. 5197.

UNIVERSAL WOOD WORKER.

This machine is new in design, is very heavy, strong and substantial. Adjustments are simple, accurate, and handled with the greatest ease. Its range of work in the hands of a competent operator is almost without limit. It will plane out of wind, and make a perfect glue joint, square up all kinds of stock, do chamfering, cross-graining, plowing, tongue and grooving, cut straight, circular or elliptical mouldings, raise panels, rabbet door frames, rabbet and join window blinds at the same time, will do ripping cross-cutting, tenoning, and numerous other operations.

Tables can be adjusted either separately, or together with the circle of the head, or in a direct vertical line. Machine planes 10 inches wide, and has 3 Bearings to mandrel.

The Boring Apparatus is simple, the Table can be operated easily, has Adjustable Gauge for Angle Boring, and suitable Stops and Gauges.

Price, 318.75, complete with Countershaft, 10 in. Slotted Steel Head, Rabbeting Head, Jointing Head, all with Knives. Weight, 2200 lbs.

## HAND PLANERS.

This machine is sometimes called a Buzz Planer, sometimes a Hand Planer, and sometimes a Jointer. There may be other names for it, but whatever it is called, it certainly is a most convenient tool. While quite a commonly used machine, we are oftentimes surprised that we do not sell more of them, especially in Pattern-making, Joining and Jobbing shops, as they easily save 80 per cent of the time over work done by hand. Besides, it is a machine that is easily kept in order, and requires almost no attention.

Can be used for a great variety of work, such as planing straight and out of wind, glue-jointing, squaring, smoothing, beveling and cornering, chamfering, rabbeting, moulding, tongueing, beading and grooving, cross-graining, tenoning, etc., etc. (it can't play lawn tennis, rock a cradle, or churn butter).

Somewhat to our regret, we feel compelled to show three styles of these machines.

In making up this book we have—as far as possible—endeavored to show a very complete variety, and at the same time avoid multiplicity, and would simply say that, while the machines that are highest in price are the best, the medium and lower priced machines are excellent in design, workmanship, and finish, and are heavy and strong.

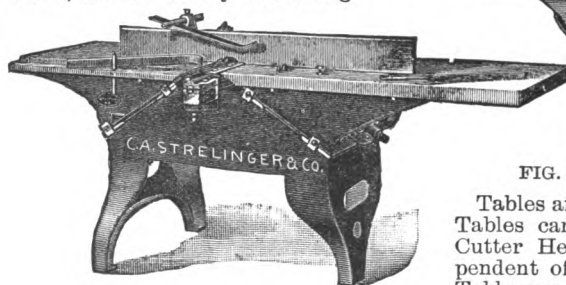


FIG. 5198. HAND PLANER.

Taken all in all, we believe that this is the finest Hand Planer now in the market; is heavy and strong. The frame has three points of bearing on the floor, which make it impossible to strain or twist it by bolting down or by settling of the floor.

Tables are 7 ft. long. Rear Table has Rabbeting Groove  $\frac{1}{4}$  in. deep, and an adjustment for making hollow or "Spring" glue joints. Both Tables can be drawn away from the Cutter Head on a level, independent of inclined way, so as to leave an opening 7 in. wide.

Cutter Head is four-sided. Has plain Dovetailed Slots, which admit of Moulding, Tongue and Grooving, and other special Cutters being attached without removing the Straight Knives, thus either Beading, Moulding, or Grooving may be done at the same time as Surfacing. Price includes one pair of Straight Knives and Countershaft.

Weight.

8 in. Hand Planer,	\$110.50;	900 lbs.
12 " " "	127.50;	1300 "
16 " " "	146.00;	1500 "
20 " " "	166.00;	1700 "
24 " " "	187.00;	1900 "
30 " " "	231.00;	2600 "

### ATTACHMENTS AND EXTRAS.

Can furnish Spring Attachment for running Mouldings and similar work. Price, including 4 Dovetail Bolts, \$4.50. Special Rabbeting Table & Gauge, \$5.10.

Steel Lips furnished on Tables, at the following extra cost: 8 in., \$5.10; 12 in., \$5.95; 16 in., \$6.80; 20 in., \$7.65; 24 in., \$8.50.

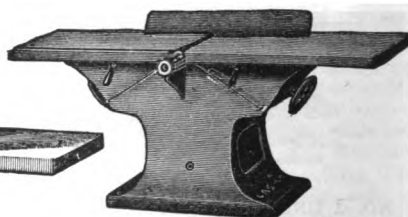


FIG. 5199. HAND PLANER.

Tables are more than 7 ft. long. Both Tables can be drawn away from the Cutter Head on a straight line, independent of the inclined way. Either Table can be adjusted by means of a large hand wheel. The rear Table is arranged for rabbeting. Adjustable Fence is attached to the In-Feeding Table, and can be instantly changed to any bevel. Cutter Head is four-sided, being slotted on two sides to admit of Moulding and other Cutters being attached without removing the straight

Knives, so that surfacing and moulding can be done at one operation. Price includes one pair of Straight Knives and Countershaft.

	Weight.
12 in. Hand Planer, \$117.00; 1200 lbs.	
16 " " " 131.00; 1425 "	
20 " " " 145.00; 1600 "	
24 " " " 155.00; 1800 "	

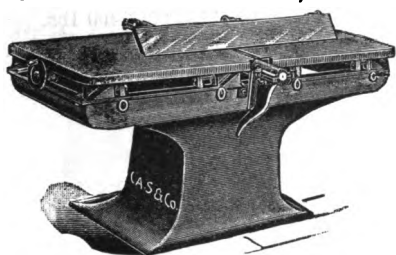


FIG. 5200. HAND PLANER.

This is practically the same machine shown in former catalogue, with some changes and improvements, which necessitates a small advance in the price. The Frame is the same length as Table, is heavy and well braced. Length of table, from 6 to 7 ft. Table can be adjusted to any position that may be required. By means of a simple device, the Bed can be taken from level for making spring joints. Head is four-sided. Machine has Rabbeted Bed for Door and Sash work. Price includes 1 pair of Straight Knives and Countershaft.

	Weight.
12 in. Hand Planer, \$98.00; 1200 lbs.	
16 " " " 110.00; 1480 "	
20 " " " 120.00; 1600 "	
24 " " " 134.00; 1800 "	

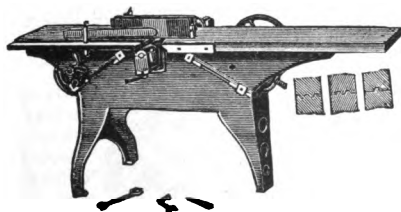


FIG. 5201.

#### UNIVERSAL V GLUE JOINTER.

It is not always practical to make Tongue and Groove Joints on the Hand Planer, on account of the stock often being so crooked that the Tongue and Grooves are not parallel with the face of the board.

This machine is substantially the same as the Fig. 5198 Hand Planer, and is arranged with special Attachments, so that it answers in most cases as a substitute for the expensive Clamp Carriage Machine.

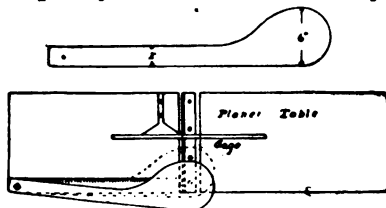
The special Gauge is made to expand laterally for different thicknesses of work, from  $\frac{1}{4}$  to  $1\frac{1}{2}$  thick, and by one change of Collars the range can be from  $\frac{1}{4}$  to 2 in. Both Faces of the Gauge are alike, so that a piece is finished at one handling. Hollow or "Spring" Joints can be obtained.

Can furnish plain Cutter Head and Knife when desired. In this case the Machine becomes a Universal Jointer, making Plain, Single V, or Combination Joints, either straight or hollow. Price includes one pair Heads, Special Gauge and Countershaft.

Price V Jointer, complete, \$146.00; Plain Jointer Head and Gauge, additional, \$12.75.

#### A BUZZ PLANER GUARD.

Having lost one finger while running a buzz planer, and not having any more to spare, I have found a guard made as follows a very useful thing, as it keeps the throat covered and is easily made and quickly taken off when necessary.



Take a board  $\frac{3}{4} \times 6$  or 7 inches and saw to shape of Fig. 1, long enough to reach from back end of table a little past throat. Drill  $\frac{1}{2}$  in. hole through table (near out edge) and put bolt through table and guard, using wood washer thickness of rabbeting recess in table to bring to level with top.

In jointing narrow stock on a wide buzz planer with the gauge in the middle, it leaves the knives exposed. This device prevents fingers or anything else getting caught. It can be pushed aside when using full width of knives, or quickly taken off for rabbeting.

M. H. N. in "The Wood-Worker."

## SURFACE PLANERS.

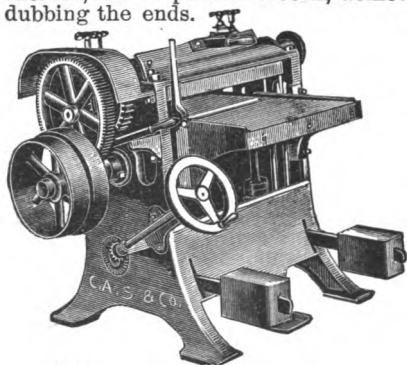
In point of all the excellent qualities which go to make up a first-class machine, the line of Surface Planers, shown from Fig. 5202 to Fig. 5207 excels. They are made with especial reference to doing smooth and fast work; are used in Furniture, Carriage, Chair, Car and Jobbing shops, and in Planing Mills for fine Door and Panel work.

These machines are of new and modern design, containing the latest improvements; the workmanship is of the best, likewise materials. All machines are of good proportions; the weights are ample, as will be seen by tables.

The Frames of all these machines are unusually heavy and rigid, and with the exception of No. 4 (which is provided for in another way) all have three points of bearing on the floor. By this means the frame cannot be strained or twisted, either by bolting down or by settling of the floor, and the Cylinder Boxes can be kept screwed down close on the journals while running at a high speed, without heating, thus avoiding wavy work.

The Beds are very rigid, with six points of support on the frame. Cylinders are made from solid steel forgings, with Bearings of ample diameter and length carefully fitted and balanced. Box Caps are planed into recesses to prevent vibration sidewise.

Pressure Bars are carefully arranged and fitted. Pieces 4 in. long, and even shorter, can be planed smooth, without dubbing the ends.



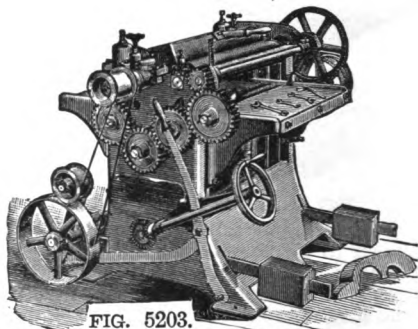
**FIG. 5202. NO. 1 PLANER & SMOOTHER.**

Cylinder has Bearings  $1\frac{1}{2}$  in. diam., 7 in. long. Feed Rolls are set very close

to the Cylinder, and arranged to hold the board down firmly to the Bed. Upper In-Feed Roll is fluted. All Rolls are  $3\frac{1}{2}$  in. diam. Upper Rolls are driven by the Gearing.

These Machines plane from  $\frac{1}{8}$  to 6 in. thick. Prices include Countershaft.

	Weight.
16 in. Planer, \$153.00; 1400 lbs.	
20 " " 170.00; 1600 "	
24 " " 191.25; 1800 "	



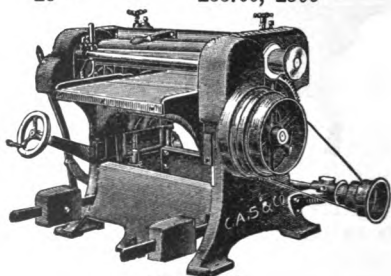
**NO. 2 $\frac{1}{2}$  SURFACER—DOUBLE BELTED.**

Cylinder has Bearings  $1\frac{1}{2}$  diam., 8 in. long. Cylinder is Double Belted, and the Feed Works are driven from it by means of a Tightener and Cone Pulleys. All the Rolls are geared together and driven, making a strong, uniform Feed.

The Feed Rolls are set as close to the Cylinder as possible, and arranged to hold a board down firmly to the Bed.

These Machines plane from  $\frac{1}{8}$  to 7 in. thick. Prices include Countershaft.

	Weight.
20 in. Planer, \$238.00; 2000 lbs.	
24 " " 262.00; 2250 "	
28 " " 285.00; 2500 "	



**FIG. 5204.**

**NO. 3 SURFACER—DOUBLE BELTED.**

Cylinder has Bearings 2 in. diam., 9 in. long.

Read Article "How You and We Buy" See Index.

Feed Rolls are set very close to the Cylinder, and arranged to hold lumber down firmly to the Bed. The Forward Feed Roll is geared at both ends, so that there is equal pressure on the lumber its whole length. The Upper End Feed Roll is usually fluted, but may be made smooth when so ordered. Broken or Divided Feed Roll and Bonnet (or Chip Breaker) are furnished when ordered, at an extra price.

These Machines plane from  $\frac{1}{4}$  to 7 in. thick. Prices include Countershaft.

	Weight.
26 in. Planer, \$335.00;	2800 lbs.
30 " " 365.00;	3100 "
36 " " 416.00;	3500 "

Extra for Divided Roll and Bonnet,  
26 in., \$46.75; 30 in., \$55.25; 36 in., \$63.75.

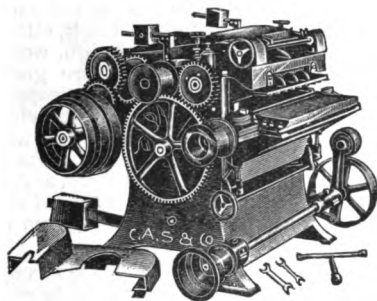


FIG. 5205.

#### NO. 3 DOUBLE SURFACE PLANER.

This Machine is the same as the No. 3 Surfacers Double Belted, with the addition of the Lower Cylinder and a special Countershaft for driving it.

The Pressure Plate is adjustable by a Hand Wheel and Cross Shaft. The Lower Cylinder Yoke is also adjustable vertically by a Hand Wheel, Gears and Cross Shaft, and the Delivery Bed may be easily set for any depth of cut, and detached to get access to the Knives by removing two screws.

These Machines plane from  $\frac{1}{4}$  to 7 in. thick. Prices include 2 Countershafts.

	Weight.
26 in. Planer, \$450.00;	3850 lbs.
30 " " 501.50;	4200 "
36 " " 535.50;	4600 "

Extra for Divided Roll and Bonnet,  
26 in., \$46.75; 30 in., \$55.25; 36 in., \$63.75.

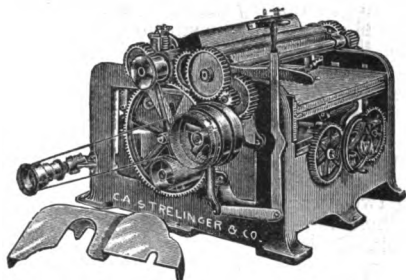


FIG. 5206. NO. 4 HEAVY PLANER—DOUBLE BELTED.

This Machine was designed more especially for the Furniture trade, and embodies all improvements that have been suggested by long experience in the manufacture of fine Surfacers.

We believe there is only one other make of Planer that will equal this.

The main Frame is deep and heavy. The entire machine rests mainly on the two Central Base Flanges under the Cylinder. In nearly all other machines the Frame is bolted to the floor at the four corners, consequently any shrinkage or settling of the floor will draw the Frame more or less with it, and our experience is that any twisting of this sort will make the Boxes heat more or less. This is especially the case on Planers 30 in. wide or more.

In this Machine the Flanges on the Front and Rear Cross Bars act only as balancing or steadying points, and do not touch the floor until they are wedged up or leveled by the person setting up machine, so that the whole weight of the machine comes on the two central hangers. It is practically impossible to strain a Frame which rests only on two points.

Cylinder has Bearings  $2\frac{1}{2}$  in. diam., 10 in. long.

The Bed is planed the whole length; is raised and lowered on especially heavy and well fitted inclines. Lower Incline is moved by two heavy, square threaded screws, worked together by Cut Gears, and operated by a large central Hand Wheel. One revolution of the wheel gives  $\frac{1}{4}$  in. vertical motion to the Bed. The Bed Plate proper, or either outside section, may be removed without taking the machine apart.

The Pressure Bars for holding work to the Bed hang about  $2\frac{1}{2}$  in. apart when

working, whereby pieces  $3\frac{1}{2}$  in. long, or even shorter, may be surfaced perfectly true. The Bonnet or Chip Breaker is steel faced, and swings concentrically with the cylinder, within the limits of the cut.

Large Housings are provided to cover the gearing on both sides of the machine. These may be lifted off by slackening two screws.

These machines plane from  $\frac{1}{4}$  to 7 in. thick. Price includes Countershaft.

		Weight.
24 in. Planer,	\$425.00;	4300 lbs.
27 " "	455.00;	4500 "
30 " "	489.00;	4700 "
36 " "	548.00;	5100 "

Extra for Divided Roll and Bonnet,  
24 in., \$49.25; 27 in., \$55.25; 30 in., \$61.25;  
36 in., \$68.00.

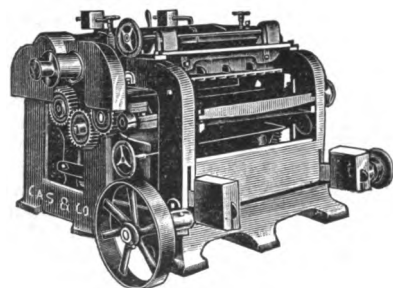


FIG. 5207. NO. 4 HEAVY DOUBLE SURFACE PLANER.

This Machine is practically the same as the No. 4 Heavy Planer Double Belted, with the addition of the Lower Cylinder and a special Countershaft for driving it.

The Lower Cylinder is a solid steel forging, provided with 2 Knives. The Bearings are unusually long, and very carefully fitted.

These machines plane from  $\frac{1}{4}$  to 7 in. thick; 2 Countershafts are furnished, one of which is located directly in the rear of the machine to drive the Lower Cylinder. The main Counter can be over the machine, or below the floor, as desired.

		Weight.
24 in. Planer,	\$552.50;	5000 lbs.
27 " "	595.00;	5400 "
30 " "	637.50;	5700 "
36 " "	723.50;	6200 "

Extra for Divided Roll and Bonnet,  
24 in., \$49.25; 27 in., \$55.25; 30 in., \$61.25; 36 in., \$68.00.

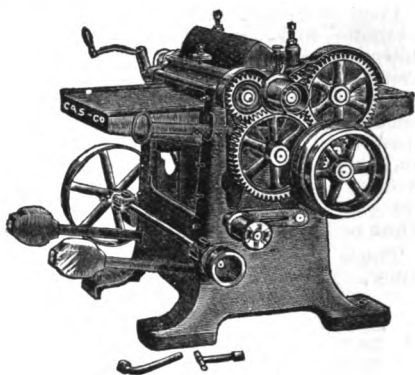


FIG. 5208.

#### DOUBLE BELTED SURFACER.

The cut represents a newly designed Surfacers and Planers suitable for work 24 in. wide, from  $\frac{1}{4}$  to 8 in. thick, either hard or soft wood. The design, workmanship, finish and weight are good. It will do smooth, fast work. An especially attractive feature is the price, which is lower, we believe, than any machine of like quality has been furnished for, up to the present time, and is fully equal in all respects to many of the Planers that are sold at prices from 15 to 25 per cent higher.

Frame is cast in one piece; is strong and solid. The Table or Bed is also cast in one piece, and is dovetailed into the Frame with extra long Bearings. Table is raised and lowered by means of Crank Handle, an Indicator on side of Frame showing exact thickness machine is set to plane.

Cylinder is of forged steel, with large Journals and long Self-oiling Boxes. The Cylinder is Double Belted, having a pulley at both ends.

Both Pressure Bars work very close to the Knives, are adjustable independently of each other and the Feed Rolls, thus insuring steadiness even when planing very short and thin stuff. They are Self-adjusting, regulating themselves to the various sizes of thick and thin lumber.

Feed is driven from Cylinder; can be stopped or started instantly. Feed Rolls (4 in number) are of steel, are strongly geared, and set as close to the Cylinder as possible. In-Feeding Roll is fluted, and held down by connected



lever and weights. Out-Feeding Roll is held down by large steel coil springs, making a strong, positive Feed. There are two changes of Feed, Fast and Slow. Price includes Countershaft.

Price, \$175.00; weight, 2000 lbs.

#### SINGLE BELTED SURFACER.

This Machine, which we do not illustrate, is a Single Belted Planer of similar design and construction to the foregoing, with the exception that the Feed is driven from Countershaft. It planes 24½ in. wide, and from ¼ to 8 in. thick. We can recommend this machine as thoroughly reliable, and the best machine for the money in the market. Price includes Countershaft.

Price, \$160.00; weight, 1850 lbs.

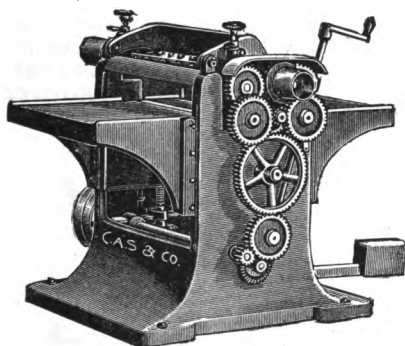


FIG. 5209.

#### 26 INCH DOUBLE BELTED PLANER.

This Machine planes 26 in. wide and 7 in. thick; is a heavy, strong, well made tool. Price includes Countershaft.

Price, \$240.00; weight, 2700 lbs.

### PLANER, MATCHER AND MOULDER.

The Machine shown here is of quite recent design; is simple, convenient of adjustment, strong and fast-feeding, and will do excellent, smooth work. The Frame is cast in one piece, is wide at the base; heavy, strong, and solid.

The Table is also cast in one piece. The entire Table, with Matcher Heads,

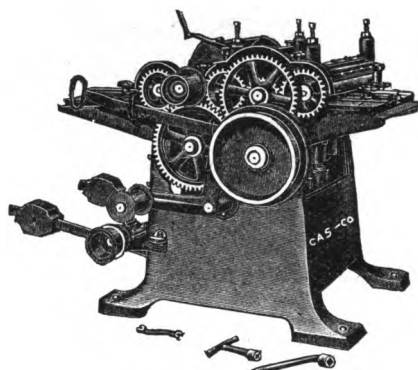


FIG. 5210.

#### PLANER, MATCHER AND MOULDER.

is raised and lowered by means of Crank Handle. An Indicator shows exact thickness machine is set to plane.

Cylinder is Double Belted, having a pulley at both ends. Cylinder Head is four-sided, being slotted on two sides to admit of Patent Siding, Beading, Moulding and other Cutters, being attached without removing the straight knives, so that Surfacing, Matching and Moulding may be done at one operation.

Pressure Bars are Self-adjusting, the Pressure Bar and Chip Breaker being placed on each side of the Cylinder, insuring steadiness when planing short and thin stuff.

Feed consists of 6 large steel Feed Rolls. Is very powerful, driven from the Cylinder, and can be instantly stopped and started.

Matcher Heads move up and down with Table, thus saving time in separate adjustments, and can be instantly removed when desired, leaving the table clear for planing its entire width. The Matcher Spindles are of forged steel, the Heads of gun metal.

This Machine planes 24 in. wide, from ¼ to 8 in. thick, and Matches any width up to 12 in. Has two changes of Feed, 25 and 45 lineal ft. per minute.

Price includes Countershaft, and one set of Knives and Bits for Planing, Matching, Beading and Patent Siding.

Price, \$290.00; weight, 2500 lbs.

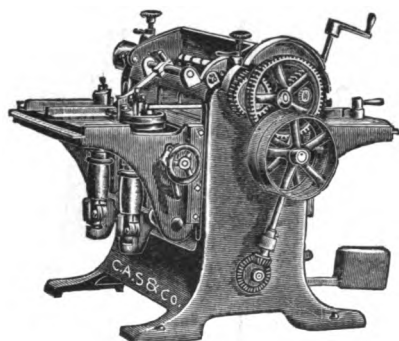


FIG. 5211.

**NO. 1 PLANER AND MATCHER.**

This is a Single Belted Machine, of excellent design, and intended especially for the requirements of Job Shops and small Planing Mills, where a large variety of custom work is done, and where space and power are limited. It will Surface, Tongue, Groove and make Flooring, Beading, Siding and various styles of Flat Moulding. Capacity about 15,000 lineal ft. per day.

Will plane 24½ in. wide, 7 in. thick, and Matches 12 in. wide. Price includes Countershaft, Matcher Head and Knives. Price, \$255.00; wght. 2300 lbs.

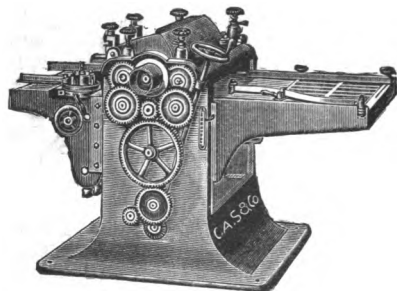


FIG. 5212.

**NO. 2 PLANER AND MATCHER.**

Adapted for Furniture and Cabinet Factories, Planing and Saw Mills, Carriage and Wagon Shops, etc., etc. Has Double Belted Cylinder, and is a strong, heavy machine. Planes 26 in. wide, 7 in. thick, and Matches up to 14 in. wide. Capacity about 17,000 lineal ft. per day. Price includes Countershaft, Matcher Head and Knives.

Price, \$300.00; weight, 3000 lbs.

**PLANERS.**

The machines which are shown in Figs. 5213 to 5215 stand in a class by themselves. They have been on the market for over twenty years; thousands have been sold (there being not less than 300 of these different machines in use in our own State). In design they are somewhat old-fashioned, although improvements have been added from time to time. As compared with more modern machines, they are rather light. The workmanship throughout is quite good.

While it is with some hesitancy that we place this line of Machinery in a book that is given up almost entirely to the best grades of Tools and Machinery, we are impelled to this action, first, by the fact that there are many instances where users cannot afford to pay the price of the best Machinery, and second, that the machines themselves have, to the best of our knowledge, given excellent satisfaction wherever used.

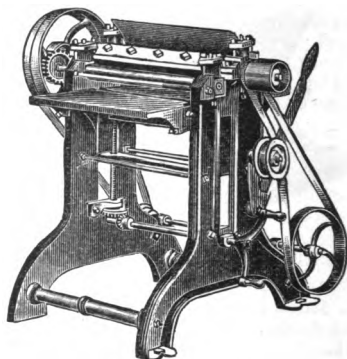


FIG. 5213. SURFACE PLANER.

This machine has two Feed Rollers; one before and one behind the Cutter Head. Cone Pulley has two speeds.

It is very easily adjusted; is suitable for hard or soft wood. Planes up to 6 in. thick. Is made in four sizes, suitable for planing stuff 12½, 16, 18 and 20 in. wide.

12½ in. Machine .....	\$85.50
16 " " .....	90.00
18 " " .....	96.00
20 " " .....	103.00

Above prices do not include Counter-

shaft, which is \$13.50 extra. Four out of five of these machines are sold without the Countershaft.

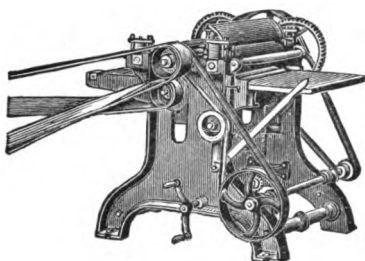


FIG. 5214.

**DOUBLE SURFACE PONY PLANER.**

This machine is used largely in Sash, Door and Blind factories; is readily changed for different thicknesses of lumber; has a Feed Roll outside of the cutter head, to carry lumber clear from the machine after the lower head has done its work. Three sizes are made, planing 16, 20 and 24 in. wide, and 8 in. thick.

16 in. Machine.....	\$160.00
20 " " .....	200.00
24 " " .....	225.00

Prices include Countershaft.

**PLANER, MATCHER AND MOULDER.**

The illustration which follows shows the Double Surfacing Machine, but the Single Surfacers is quite similar in design and construction.

The general construction of the Single Surfacing Machine is such, that to change for planing different thicknesses, the Bed or frame that lumber rests on while being planed is raised by a single crank. There is no part of the machine that can not be easily reached from the outside. The Matcher Heads are set outside the Feed Rollers, and Bearer and Moulder Heads. Machine has two rates of speed.

Price, 20 in. Machine, \$250.00; 24 in. Machine, \$270.00.

Beading Attachment, \$18.00; Four-Sided Slotted Steel Moulding Head, \$9.00.

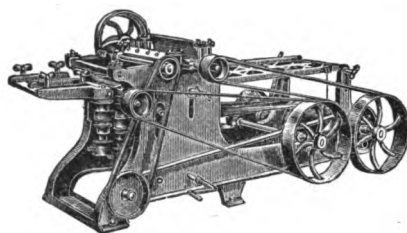


FIG. 5215.

**DOUBLE SURFACE PLANER, MATCHER AND MOULDER.**

This machine is well adapted for small shops where but one Planer is used, as it will do a great variety of work. Planes from  $\frac{1}{4}$  to 6 in. thick up to the width capacity of the machine. Will tongue and groove flooring, plane casings both sides and both edges, either square or bevel, or mould one or both edges at the same time. Is easily changed from Double to Single Surfacing, also from Planing and Matching to Surfacing.

Price, 20 in. Machine, \$315.00; 24 in. Machine, \$337.50.

Beading and Moulding Attachments, \$27.00 extra.

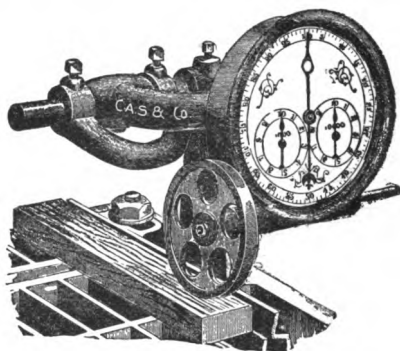


FIG. 5216. MEASURING REGISTER.

Valuable for obtaining the Lineal Measurement of lumber run through Moulding, Planing and Sawing Machines.

Can be attached to nearly all styles of machines. Surface measure can be readily computed when desired, and by removing Register and inserting a steel center, as shown in cut, an accurate speed indicator is obtained.

Price, \$20.00.

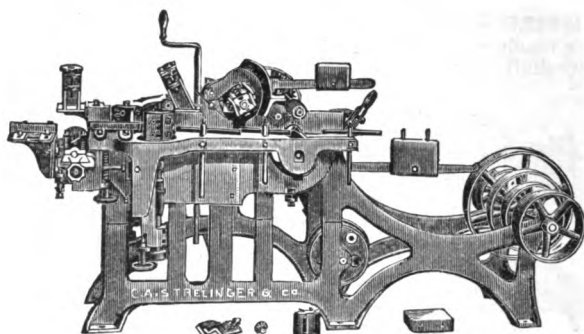


FIG. 5217. NO. 2-6 INCH FOUR-SIDED MOULDER.

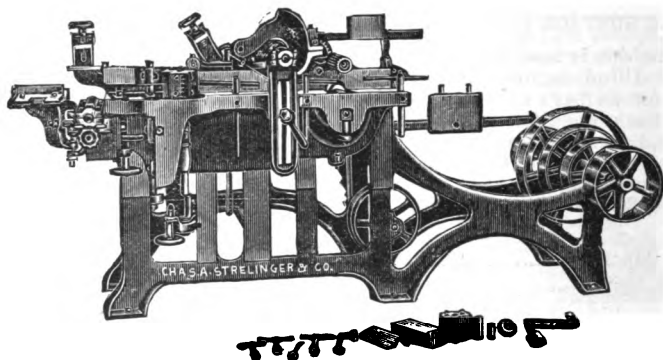


FIG. 5218. NO. 1-6 INCH FOUR-SIDED MOULDER.

### MOULDERS OR STICKERS.

We describe and price here a very complete line of Moulders, in fact, two lines. Such machines as are marked No. 1 are of very recent design, and have all the latest improvements. Machines classed as No. 2 are Standard machines; none of them are of old design, but they are not as heavy, nor as "Up-to-date" as the others, although we believe they will be found equal in all respects to the majority of machines in the market.

#### NO. 1. 4 INCH FOUR-SIDED MOULDER.

This is especially adapted to work small Mouldings, Beads, Trunk Slats and Sash, also Blind Slats. In general style it is similar to the machine shown

in Fig. 5217. Feed Works consist of two Upper Steel Fluted Rolls, and one Large Friction Roll in the bed. Table will lower 20 in. Side Spindles run on Patent Self-oiling Steps. The under Cutter has Vertical Adjustment, and is provided with a substantial Pressure Foot. The Outside Head Stock is clamped to table at two points; may be placed at any angle, and adjusted horizontally or vertically without disturbing the angle.

Five Heads and 4 sets of Cutters are furnished with each Four-Sided Machine.

4-Sided Machine .....	\$150.00
3-Sided " .....	131.25
2-Sided " .....	112.50
1-Sided " .....	93.75

Weight 1000 lbs.

Read Article "Variety" See Index.

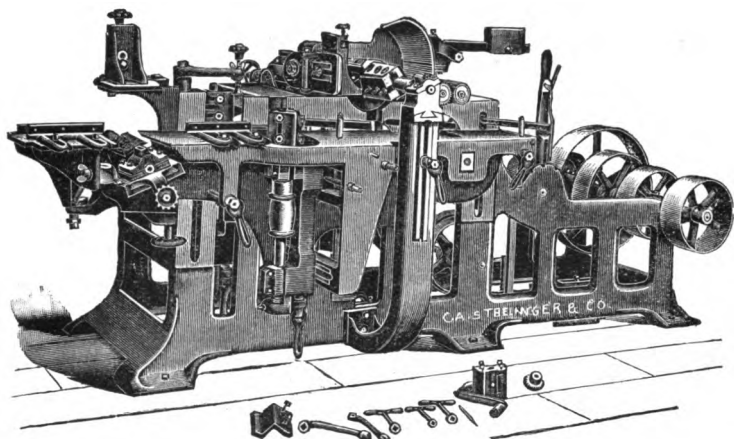


FIG. 5219. NO. 1—7 INCH FOUR-SIDED MOULDER.

## NO. 2.

## 6 INCH FOUR-SIDED MOULDER.

This machine is shown in Fig. 5217. Top Head has Lateral Adjustment of 1 in. Under Head has Lateral and Vertical Adjustment. Both inside and outside Heads may be set to an angle, and adjusted vertically or horizontally without disturbing the angle. Four rates of Feed are provided for; Table will lower 15 in.; Tail-piece to bed is hinged and swings out from under head to give access to cutters. Side Spindles run on Patent Self-oiling Steps; Adjustable Throat Plates on each side of under head.

Four Steel 4-Slotted Heads, with 1 pair of Straight Bits on each, and 1 Steel Cap or Sash Head; Wrenches, Spur Feed, and Filling-up Collars are furnished with each Four-Sided Machine.

4-Sided Machine.....	\$208.00
3-Sided       "       .....	188.00
2-Sided       "       .....	168.00
1-Sided       "       .....	148.00

Weight 1500 lbs.

## NO. 1.

## 6 INCH FOUR-SIDED MOULDER.

This machine is shown in Fig. 5218. In general construction it is similar to the No. 2. The top Head is provided with an outside support connected with

the table, the inside Head with Adjustable Chip Breaker.

4-Sided Machine.....	\$220.00
3-Sided       "       .....	200.00
2-Sided       "       .....	180.00
1-Sided       "       .....	160.00

Weight 1600 lbs.

## NO. 1—7 INCH FOUR-SIDED MOULDER.

This machine is shown in Fig. 5219; is very heavy and rigid. Frame is cast in one piece and well braced. Feed Works consist of 2 Top Rolls, 3 in. diam., and 1 Roll in Bed, all driven and powerfully geared together. Hood over top head is provided with Patent Hinged Chip Breaker. Inside and Outside Head Stocks are provided with Horizontal and Vertical Adjustments, and may be set at an angle. The belts for these two Heads pull directly against the bottom of the boxes. Top Head Stock has Lateral Adjustment, and Arbor is provided with substantial outside bearing. Inside Head has Adjustable Chip Breaker and Take-up. Machine has Ball Bearings to raise table. Table is clamped to frame at two points, and will lower 9 in. 4 Steel 4-Slotted Head and 1 Steel Cap Head are furnished with each Four-Sided Machine. Machine has four rates of Feed, viz: 24, 32, 38 and 46 ft. per minute.

4-Sided Machine.....	\$280.00
3-Sided       "       .....	260.00
2-Sided       "       .....	240.00
1-Sided       "       .....	220.00

Weight 2500 lbs.

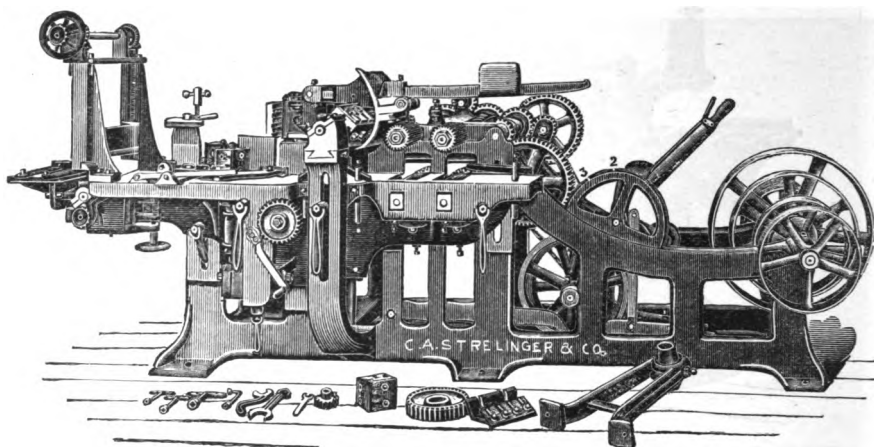


FIG. 5220. 9 INCH FOUR-SIDED MOULDER.

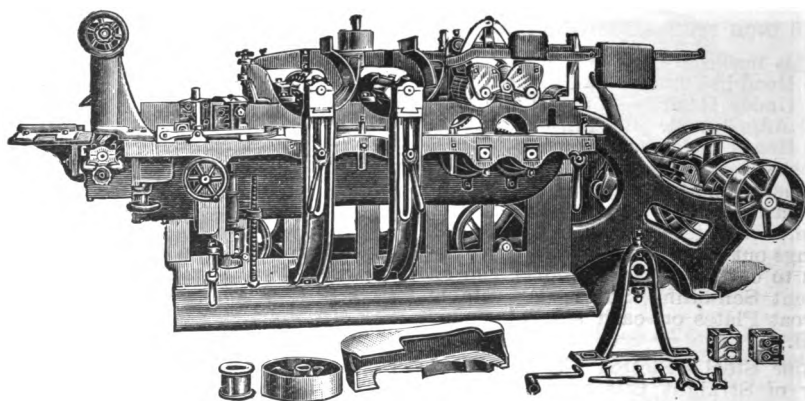


FIG. 5221. 10 &amp; 12 INCH FOUR-SIDED MOULDER, WITH TWO TOP HEADS.

## NO. 2.

## 7 INCH FOUR-SIDED MOULDER.

This machine is somewhat similar in design to the 6 inch, shown in Fig. 5217; is not as heavy as the No. 1 Machine, nor of as late a design, but will be found a very satisfactory tool in many respects.

4-Sided Machine.....	\$240.00
3-Sided       “       .....	220.00
2-Sided       “       .....	200.00
1-Sided       “       .....	180.00

Weight 1800 lbs.

## NO. 1.

## 8 INCH FOUR-SIDED MOULDER.

This is practically the same as the No. 1, 7 inch shown in Fig. 5219, but larger and heavier. Weight 3200 lbs.

4-Sided Machine.....	\$360.00
3-Sided       “       .....	320.00
2-Sided       “       .....	280.00
1-Sided       “       .....	240.00

## NO. 1.

## 9 INCH FOUR-SIDED MOULDER.

This machine is shown in Fig. 5220, and the description of the No. 1, 7 inch Machine will cover it. It has four

changes of feed, 20, 27, 41 and 55 ft. per minute. Table may be lowered 14 in. Machine will work material 9 in. wide and 4 in. thick on four sides.

4-Sided Machine.....\$440.00  
Weight 4400 lbs.

#### NO. 2.

##### 9 INCH FOUR-SIDED MOULDER.

This machine has nearly all of the advantages of the No. 1, although not of as recent design, nor as heavy.

4-Sided Machine.....\$400.00  
3-Sided " ..... 360.00  
Weight 3500 lbs.

#### NO. 1.

##### 10 & 12 INCH FOUR SIDED MOULDER. WITH 2 TOP HEADS.

This machine is shown in Fig. 5221; was designed to supply the wants of Car Shops and large Moulding establishments. The Roughing-out or extra Top Head will be found very essential when deep and heavy moulding is to be run and extra smooth finish is required. Is capable of working any moulding up to its capacity in width, and 5 in. deep. Will dress on four sides Flooring and Sheeting, Planing and Matching. Feeding Mechanism consists of four 6 inch Rolls, driven with a continuous train of gears, making a most powerful feed. Machine has Ball Bearings to raise table. Four rates of feed are provided for, 22, 30, 36 and 52 ft. per minute.

10 Inch 4-Sided Machine, \$560.00; weight, 4800 lbs.

12 Inch 4-Sided Machine, \$640.00; weight, 5200 lbs.

#### NO. 1.

##### 10 & 12 INCH FOUR-SIDED MOULDER.

This machine is quite similar in design to the foregoing, but without Top Heads.

10 Inch 4-Sided Machine, \$480.00; weight, 4300 lbs.

12 Inch 4-Sided Machine, \$560.00; weight, 4600 lbs.

#### DOOR AND SASH STICKERS.

The machines which follow are not illustrated, and are but briefly described. Can furnish circulars of any of these

machines with illustrations and descriptions.

#### ONE SIDED DOOR STICKER.

This is a 4 inch machine; has long Table for running Door Stiles. Feed Rolls, Arbors and Heads are made of steel. Price includes 2 Heads.

Price, \$106.25; weight, 750 lbs.

#### SPECIAL DOOR STICKER.

This is a 4 inch 2-Sided machine, with extra long table. Has powerful feed, and is especially adapted to running Door Stiles. It also has an Adjustable Top Table, and a Head and Top Shaft used particularly for relishing Door Stiles.

Price, \$148.75; weight, 800 lbs.

#### NEW DOOR STICKING MACHINE.

This machine is fitted with Shimer's latest improved Ogee Door Heads. The under head is placed in front of the top head; is adjustable up and down.

Price, \$191.25; weight, 1500 lbs.

#### NEW 6 INCH SASH STICKER, WITH BORING AND DOUBLE GROOV- ING ATTACHMENT.

This machine is designed to run Sash Stiles, making a continuous wide and narrow groove by placing the sash stile on a table of the grooving attachment at front end of machine, and pushing it up to the first stop. Treadle operates Boring Spindle for boring to receive the knot of the sash cord. The stile is then run through the machine, cutting the glass rabbet and mouldings. To do this requires only the top head on the machine with the grooving and boring attachment, but when machine is fitted with Outside and Under Heads in addition to the above, it is capable of running the check or meeting rails, and muntions also.

Prices include Double Grooving and Boring Attachment, one extra Sash Head, and a removable outside bearing for top head.

3-Sided Machine.....\$276.25  
2-Sided " ..... 246.50  
1-Sided " ..... 225.25

Weight 1800 lbs.

## MACHINE KNIVES.

There are at the present time in this country twenty-three manufacturers of Machine Knives, and of this number we could name a half-dozen or more whose product is first-class. For many years the prices of the different manufacturers have been alike (perhaps it is a mutual agreement, perhaps a combination, or it may be one of those awful "Octopus-es" they call a "Trust," but at any rate, they have never been severely criticized, as their prices are in the main quite reasonable).

In view of the fact that prices on all makes are alike, there is no good reason why any user should be satisfied with a poor quality of knives.

Our Machine Knives are the very best that we can procure, and we will be pleased to have a trial order—at least—from any who wish to better their condition as far as Machine Knives are concerned.

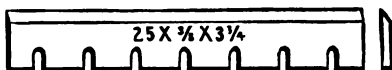


FIG. 5222. PLANER KNIFE.

## DIRECTIONS FOR ORDERING.—

Place the knife with face on paper and mark with sharp pencil carefully around all sides and slots, so as to have a sketch of knife like cut. And it is important that the length, thickness and width of knife is stated, how many knives are to be balanced in a set, and what temper is desired; whether high to grind only, medium to file slowly, or low to file easily.

THE LENGTH OF A KNIFE MEANS THE DISTANCE ACROSS THE CUTTING EDGE.

## PLANING AND BARKING MACHINE KNIVES.

ALSO BAND KNIFE JAWS AND GUIDES AND STRAIGHT KNIVES OF SAME FINISH.

All Knives 4 in. wide or less,  $\frac{1}{8}$  in. thick or less, and 6 to 31 in. long, \$0.12 per inch of length.

## LONGER KNIVES (4 in. wide or less):

31 to 40 in. long, per in.....	\$0.14
40 to 50 " " " .....	.16
50 to 60 " " " .....	.19
60 to 70 " " " .....	.22
70 to 80 " " " .....	.27

## WIDER KNIVES (to 31 in. in length)

For prices of wider Knives add 3 cts. for each  $\frac{1}{4}$  in. of width to 8 in. wide; thus a Knife either 6 or  $6\frac{1}{4}$  in. wide would be 27 cts. per in.;  $6\frac{1}{2}$  or  $6\frac{3}{4}$ , 30 cts. per in.

Figure prices at actual measurement, viz: 24 $\frac{1}{2}$ , 50 $\frac{1}{2}$ , etc. Knives wider or thicker in one part than another, figure by list of widest and thickest measurement. Measure knives by longest length, whether it be at cutting edge or back. All Knives longer or wider than are included in this list, ask for prices.

THICKER KNIVES—Advance for extra thickness on all knives as follows:

Over $\frac{1}{8}$ to $\frac{1}{4}$ thick, 10 per cent.	
" $\frac{1}{4}$ to $\frac{1}{2}$ " 15 " "	
" $\frac{1}{2}$ to $\frac{3}{4}$ " 20 " "	
" $\frac{3}{4}$ to 1 " 25 " "	
" 1 to 1 $\frac{1}{4}$ " 30 " "	
" 1 $\frac{1}{4}$ to 1 $\frac{1}{2}$ " 35 " "	
" 1 $\frac{1}{2}$ to 1 $\frac{3}{4}$ " 50 " "	
" 1 $\frac{3}{4}$ to 2 " 75 " "	
" 2 to 2 $\frac{1}{2}$ " 100 " "	

Knives with Counterbored Slot add 10 per cent.

SHORTER KNIVES ( $\frac{1}{8}$  in. thick or less, 4 in. wide or less). To 2 in. long, 50 cts. each; to 4 in. long, 62 cts. each; 4 to 6 in. long, 75 cts. each.

If over 4 in. wide, increase  $\frac{1}{4}$  for each one inch, or fractional part thereof.

Advance for extra thickness. Counterbored Slots add 10 per cent.

All FLAT KNIVES ( $\frac{1}{8}$  thick or less) with irregular edges not moulding knives, add 50 per cent to list of straight knives 6 in. long or less for small knives, except in lots of 50 or more without slots, as provided in Matcher and Joiner Bit List; to list of ordinary knives, if over 6 in. long. (This covers all knives with slightly convex, concave, angular or irregular edges of any description which can be done on a grindstone). Figure price by measurement at widest part of knife.

Advance for extra thickness. Counterbored Slots add 10 per cent.



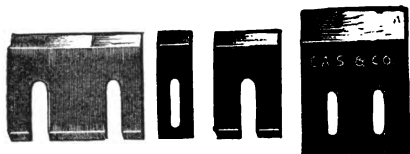


FIG. 5223. SMALLER KNIVES.

All **MOULDING CUTTERS** with edge, worked to pattern 5 in. wide or less,  $\frac{1}{8}$  thick or less, 40 cts. per inch; if over 5 in. wide, advance  $\frac{1}{4}$  for each 1 in. or fractional part thereof. No Moulding Cutter will be charged for at a less price than 50 cents each.

**MOULDING CUTTER BLANKS** (not tempered)  $\frac{1}{8}$  thick or less, 5 in. wide or less.

Two in. long or less, 25c each; over 2 to 3 in. long, 35c each; over 3 to 4 in. long, 50c each; over 4 to 5 in. long, 60c each; over 5 to 6 in. long, 70c each.

Advance 20 per cent over 5 in. wide. Advance for extra thickness.

**COPE CUTTERS**, each, \$0.50.

**MATCHER, JOINTER** and other small Bits without Slots  $\frac{1}{8}$  thick or less to 5 in. wide, to 1 in. long, 30c each; over 1 in. long to 2 in. long, 40c each; over 2 in. long to 2 $\frac{1}{2}$  in. long, 50c each.

**IRREGULAR EDGE CUTTERS**, in these sizes without slots, in lots of 50 or more, advance 50 per cent. Advance for extra thickness.

If over 5 in. wide increase  $\frac{1}{4}$  for each one inch or fractional part thereof.

**FLAT TENON MACHINE CUTTERS**, 5x5 or less, each, \$0.93.

**HOG JOINTER OR REFUSE CUTTERS** ( $\frac{1}{8}$  in. thick or less) 8 in. wide or less, 4c per square inch; over 8 in. wide to 9 in. wide, 4 $\frac{1}{2}$ c per square inch; over 9 in. wide to 10 in. wide, 5c per square inch.

**IRREGULAR KNIVES**, not otherwise provided for, extra price to cover increased cost.

## OTHER KINDS.

We are prepared to furnish Knives of any description, among them Jointer, Wood Trimmer, Miter, Moulding, Book Binders', Paper Machine, Corner, Carpet, Leather Splitter, Brush Trimmer, Dried Beef, Kraut, Hay Cutter, Band

Cutter, Brush Trimmer, etc. Prices upon application. If the applicants will be good enough to state just what they want, it will save time and trouble.



FIG. 5224.

**TENON CUTTER AND TRIMMER KNIVES.**



FIG. 5225. PAPER MACHINE KNIVES.

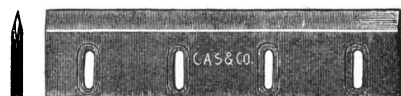


FIG. 5226.

**LEATHER SPLITTER KNIFE.**

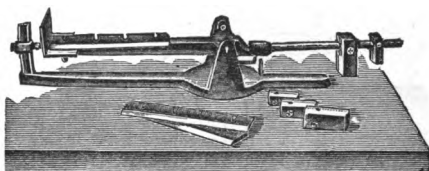


FIG. 5227.

**PROPORTIONAL KNIFE BALANCING MACHINE.**

It is needless to write of the advantages gained by having well balanced knives. Knives can be reduced to the same specific weight with a common pair of scales, but that does not attain the object, which is to have the weight agree in corresponding parts.

With this machine the desired results may be secured. If a set of Knives or Bits is balanced, and the head used is in balance, the machine will run absolutely true.

No. 1, \$15.00, complete; this is the standard size, and is suitable for knives up to 36 in. long. Weight, 60 lbs.

No. 2, \$40.00; special size for knives up to 48 in. long.

## CALIFORNIA FEED ROLLS.

(Patent Inserted Tooth.)

These Rolls are used extensively on Mouldings, Sash, Lath and Blind Slat machines, Panel Raisers, Self-Feed Rip Saws, Planers, and Gang Edgers.

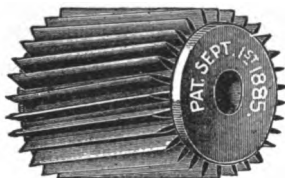
Among the many advantages of these Rolls are, the preventing of slippage, assuring positive, steady feed, which increases product of machine, in some cases as much as 50 per cent; they reduce friction, thereby saving belt power; they turn out superior moulding, because they avoid the ridges

caused by frequent stoppages of moulding fed by cast iron rolls.

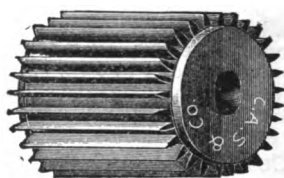
The teeth can be readily sharpened in a few moments by any one. The space between teeth not being V shape, the pitch from pine lumber cannot collect and choke them up.

Finally, they will wear for many years, and their cost is very little as compared with the money they save.

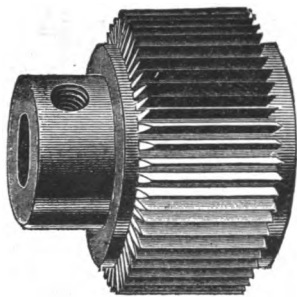
We print here a list of the most commonly used sizes, but many other sizes can be furnished. In ordering, give size and make of machine, and diameter of shaft, also supply any other information you think will be helpful.



(Spiral Tooth Roll.)



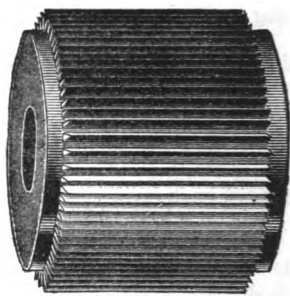
(Straight Tooth Roll.)



(Hub Roll.)

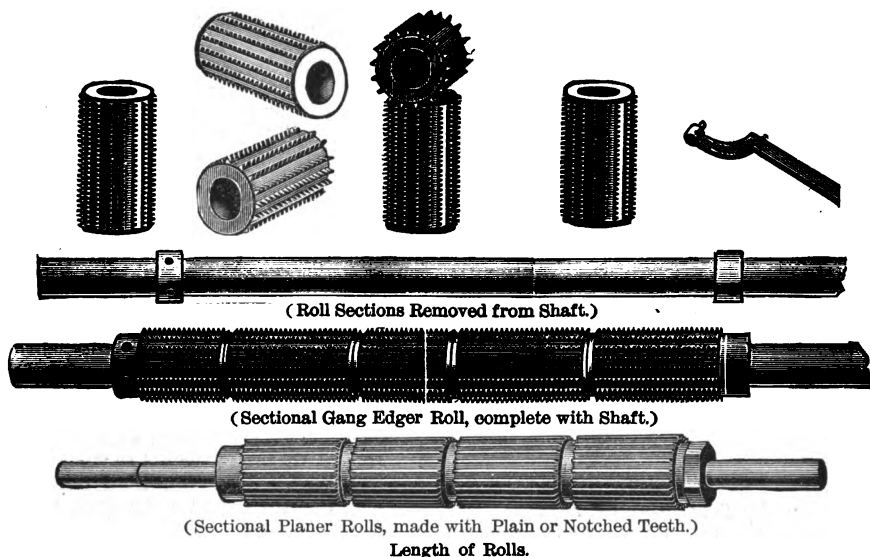
When entirely worn out Rolls can be refilled at a fraction of original cost.

Following prices are for Per Pair; Single Rolls half of list Per Pair. Prices on other sizes given upon application.



(Straight Roll.)

Diam. Inches.	Length of Rolls.									
	1½ in.	2 in.	2½ in.	3 in.	3½ in.	4 in.	4½ in.	5 in.	5½ in.	6 in.
1½	\$10.00	\$12.00	\$14.00	\$16.00	\$18.00	\$20.00	\$22.00	\$24.00	\$26.00	\$28.00
2	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00
2½	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
3	16.00	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00
3½	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00
4	20.00	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00	38.00
4½	22.00	24.00	26.00	28.00	30.00	32.00	34.00	36.00	38.00	40.00
5	24.00	26.00	28.00	30.00	32.00	34.00	36.00	38.00	40.00	42.00
5½	26.00	28.00	30.00	32.00	34.00	36.00	38.00	40.00	42.00	44.00
6	28.00	30.00	32.00	34.00	36.00	38.00	40.00	42.00	44.00	46.00



Diam. Inches.	12 in.	18 in.	24 in.	30 in.	36 in.	42 in.	48 in.	54 in.	60 in.	66 in.	72 in.
2½	\$28.00	\$33.00	\$38.00	\$44.00	\$54.00	\$64.00	\$74.00	\$84.00	.....	.....	.....
3	30.00	35.00	40.00	50.00	60.00	70.00	80.00	90.00	\$100.00	\$110.00	\$120.00
3½	32.50	37.50	42.00	52.50	63.00	73.50	84.00	94 50	105.00	115 50	128.00
3¾	35.00	40.00	44.00	55.00	66.00	77.00	88.00	99.00	110.00	121.00	132.00
3½	37.50	42.50	48.00	60.00	72.00	84.00	96.00	108.00	120.00	132.00	144.00
4	40.00	45.00	50.00	62.50	75.00	87.50	100.00	112.50	125.00	137.50	150.00
4½	42.50	50.00	56.00	70.00	84.00	98.00	112.00	126.00	140.00	154.00	168.00
4¾	45.00	52.50	60.00	75.00	90.00	105.00	120.00	135.00	150.00	165.00	180.00
5	50.00	57.50	64.00	80.00	96.00	112.00	128.00	144.00	160.00	176.00	192.00

Above prices are for Per Pair of "Sectional" Planer and Gang Edger Rolls, complete with Shafts, based on actual length of Rolls (including Collars), not Shafts. Single Rolls, including Shafts, at one-half list price.

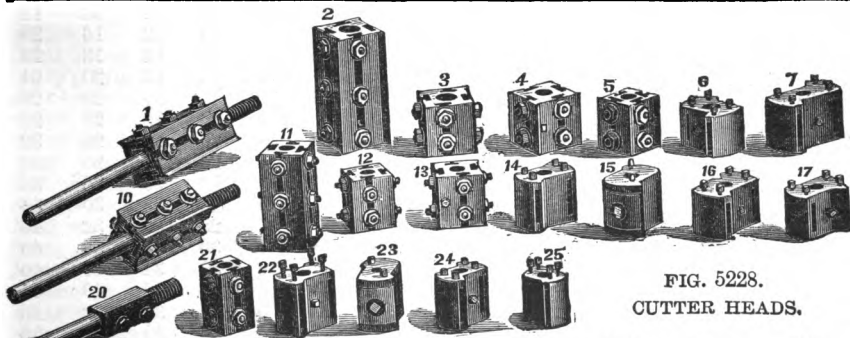


FIG. 5228.  
CUTTER HEADS.

The above represents Cutter Heads for Moulders. Prices vary according to size and amount of work. In writing, convey full particulars, with sketch having all dimensions plainly marked.

## INSERTED TOOTH SAWS.

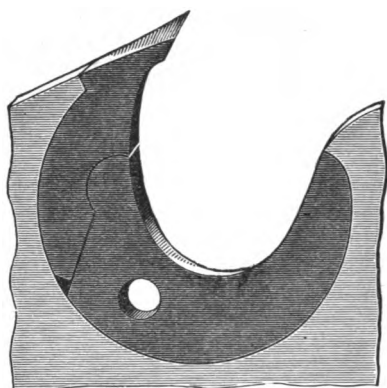


FIG. 5229. ACTUAL SIZE NO. 5 TOOTH.

While the first cost of an Inserted Tooth Saw is much greater than that of a Solid Tooth, the added convenience and advantages are a decided offset. These Saws always retain their original size. The cutting teeth are made from refined steel, and can be tempered to much better advantage than solid saw teeth. They are kept in order with less labor, and at less cost for files than a solid saw. The points enter the wood like a chisel, cutting chips and shavings instead of scraping the wood into dust. The throats have plenty of room to carry the chips and discharge them freely. The teeth, while strong enough to cut any kind of timber, are so constructed that when they come in contact with spikes, mill dogs, etc., they are broken off or torn out without injuring the plate. In a Solid Tooth Saw if two or three teeth are broken, the saw has to be reduced by filing or grinding, which not only lessens its efficiency, but usually entails an expense of several dollars, while with an Inserted Tooth Saw the expense is only the cost of a few bits, at 3 cts. each.

**AS TO MAKES.**—There are quite a number of makers whose product is first-class, among them the American Saw Co., R. Hoe & Co., H. Disston & Sons, and Simonds Mfg. Co. To the best of our knowledge, all of the foregoing concerns make first-class saws.

**AS TO SIZE OF TOOTH.**—Five sizes

are furnished. No. 3 is the best for general work. Tables give gauges and number of teeth sizes Nos. 1 to 4. Saws with No. 5 teeth are made from one to two gauges heavier, and on account of extra number of teeth, cost from 10 to 25 per cent more, according to size. 30 in. No. 5 Saw has 34 teeth, 40 in. 46 teeth, 50 in. 56 teeth, and 60 in. 72 teeth.

**AS TO USES.**—No. 1 is used in soft, gummy lumber where larger throat room is required. Nos. 2 and 3 are used for general sawing in both hard and soft wood. No. 4 is considered the best Tooth for Edgers and Bolter Saws, while the No. 5 Tooth is particularly adapted to the modern fast steam feed mills.

**EXTRA TEETH.**—With each Saw from Nos. 1 to 4 we furnish 10 sets of extra Points; with No. 5, from 4 to 8 sets, according to size. From 2 to 6 extra Shanks are furnished with each Saw, according to size.

**DUPLICATE POINTS,** for Nos. 1 and 2 Saws, \$3.60 per hundred; for Nos. 3, 4 and 5, \$3.00 per hundred.

**DUPLICATE SHANKS,** for Nos. 1 and 2, 30 cts. each; Nos. 3, 4 and 5, 25 cts. each.

## TABLE OF PRICES.

This list of prices covers Saws with teeth sizes Nos. 1, 2, 3 and 4.

Diam. Inch.	Price.	Gauge.	No. Teeth.			
			No. 1.	No. 2.	No. 3.	No. 4.
16	\$14.40	11	...	...	12	...
18	16.20	11	...	...	14	16
20	18.60	11	10	12	14	18
22	21.00	11	10	12	16	20
24	23.40	11	12	14	18	22
28	28.20	10	14	16	20	24
30	31.20	10	14	16	20	28
32	34.20	9	16	18	22	28
36	42.00	8	20	22	24	32
40	49.20	8	22	24	26	34
42	52.80	8	24	26	28	34
46	63.00	7	26	28	30	36
48	69.00	7	28	30	32	40
50	78.00	7	30	32	34	40
52	90.00	6	30	34	36	40
56	120.00	6	32	36	40	44
60	144.00	5	34	38	42	48
64	180.00	5	36	40	44	52
66	195.00	5	40	44	48	56
68	210.00	5	40	44	48	56
72	270.00	4	44	48	52	

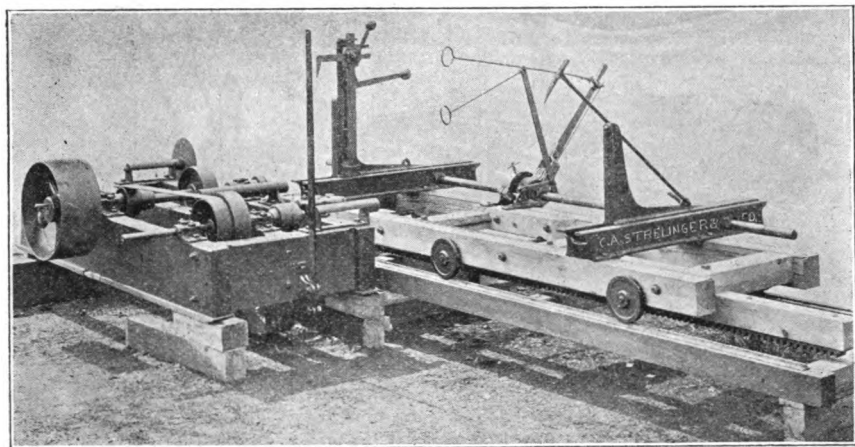


FIG. 5234. NO. 0 SAW MILL

## SAW MILLS.

The line of Mills shown here is a very complete one. There are four distinct sizes, and the Nos. 1 and 2 Mills can be furnished double (with Top Saw Attachment) thus making six styles in all.

The prices at which we can furnish these Mills will compare favorably with those of other Mills of like quality.

There are many reasons why the purchaser of a Portable Saw Mill should be very careful in making a selection. To particularize—the conditions under which a Saw Mill is used are different from those of almost any other machinery; ninety-five per cent of the Machinery shown in this book is used in cities, towns or villages in which are found machine shops, so that in case of break-downs or accidents it is neither difficult nor costly to have repairs or substitutions made. A Portable Saw Mill is generally used many miles away from shops and shop conveniences. Break-downs and attendant delays are consequently very expensive, and a few dollars saved in first cost of Mill may prove in the end to be very unwise economy.

The Mills shown here are of the latest design. The materials used throughout

are of the best quality that can be procured, the wood being thoroughly seasoned pine, the arbors turned from steel forgings (the extra cost of this last item is often more than the difference in price asked for inferior Mills). In the Paper Frictions only the best quality of board is used. Every machine is thoroughly inspected before being sent out, and is well packed for shipment.

All sizes are usually carried in stock, and can be shipped on very short notice.

These Mills are so constructed that when set up ready for use, they are rigid, firm and strong, and withal, extremely portable.

## IN GENERAL.

**RIGHT OR LEFT HAND**—Mills are furnished both Right and Left Hand. Cuts represent Right Hand Mills. All orders are filled Right Hand unless otherwise specified.

**DRIVING PULLEYS**—Driving Pulleys will be changed in size to suit purchaser, and can be placed either inside or outside of Husk Frame.

**FEED**—This will be changed to suit lumber sawed, as purchaser may direct.

**SAWS AND BELTS**—Prices do not include Saws or Belts. Saws are priced

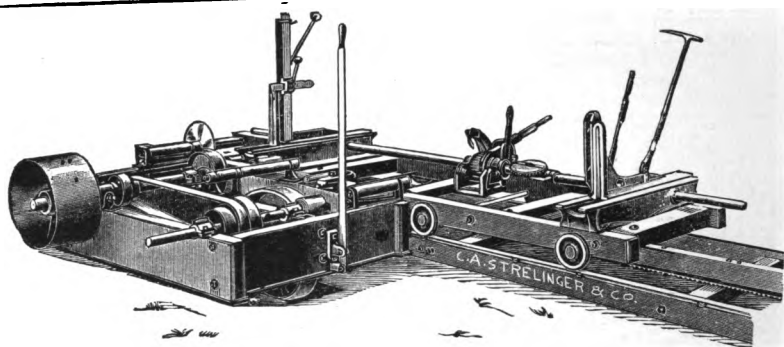


FIG. 5235. NO. 1 SAW MILL.

elsewhere in catalogue. Prices of Belts made known upon application.

**BLOCKS, CARRIAGE, TRACK SILLS, ETC., ETC.**—Extra Blocks (and other styles), Set Rods, Carriage, Portable Track Silks, Wheels and Axles, Track and Rack Castings furnished when desired. Prices upon application.

#### NO. 0 SAW MILL.

This is our smallest size; has a capacity of about 5000 ft. per day; will carry saws up to 56 in. diam., and requires from 6 to 12 horse power, according to the work that is to be done.

**HUSK FRAME**—7 ft. long, 3 ft. wide, 12½ in. deep, 4 in. thick, 2½ in. Steel Arbor, 5 in. Collars; Driving Pulley, 20 in. diam. x 8 in. face; Rag Wheel, 24x4; Gig and Feed Paper Frictions, 13 and 5 in. x 4 in. Face; Rag Shaft, 1½ in. diam.; Rag Pinion, 4½ in. diam.; Spreader, 13 in. diam.; Upper Feed Shaft, 1½ in. diam. Two changes of feed for 3 in. belt.

**CARRIAGE**—Same as described in the Medium Mill.

**BLOCKS**—Same as described in the Medium Mill.

Portable Track Silks framed in sections, with Track bolted on, will be furnished when ordered, but are not included in regular price, as they are generally furnished by user.

No. 0 Mill, complete.....	\$245.00
Husk Frame, " .....	102.00
Carriage, " .....	72.00
Blocks, " .....	72.00

Weight of complete Mill, about 2700 lbs.

#### MEDIUM SAW MILL.

This Mill has a capacity of about 8000 ft. per day. Will carry saws up to 60 in. diam., and requires from 10 to 18 horse power, according to the work to be done.

**HUSK FRAME**—7 ft. 6 in. long, 4 ft. wide, 12½ in. deep, 4 in. thick, 2½ in. Steel Arbor, 5 in. Collars; Driving Pulleys, 20 in. diam. x 12 in. face; Rag Wheel, 24x5; Gig and Feed Paper Friction, 14 and 5 in. x 4 in. face; Rag Shaft, 1½ in. diam.; Rag Pinion, 4½ in. diam.; Turned Spreader, 13 in. diam.; Upper Feed Shaft, 1½ diam. Three Changes of feed for 3 in. belt.

**CARRIAGE**—20 ft. long, with 6 pair of wheels; Timbers, 4½x5½ in.; Rack, 25 ft. long, 3½x4½ in.; 48 ft. of A Track, and 48 ft. of Flat Track, with necessary screws and bolts complete.

**BLOCKS**—Two furnished, opening 36 in. from the saw, provided with a new Standard Ratchet. Made in one piece with solid knee; one provided with a Knight Excelsior Dog, combining both Log and Last-Board Dog, the other with a common Log Dog; 16 ft. of Set Rod, 1½ in., Keyseated entire length, and with Steel Knee Pinions. These Blocks will fit Carriages up to 44 in. outside.

Portable Track Silks framed in sections, with Track bolted on, will be furnished when ordered, but is not included in regular price, as it is generally furnished by user.

Medium Mill, complete, \$270.00	
Husk Frame, " .....	128.00
Carriage " .....	72.00
Blocks, " .....	72.00

Weight of complete Mill, 3000 lbs.

## NO. 1 SAW MILL.

This Mill has a capacity of from 10,000 to 20,000 ft. per day, according to class of work. Will carry saws up to 60 in. diam., and requires from 20 to 30 horse power.

**HUSK FRAME**—8 ft. long, 5 ft. wide, 12½ in. deep, 4 in. thick, 2½ in. Steel Arbor, 5 in. Collars; Driving Pulley, 22 in. diam. x 12½ face; Rag Wheel, 30x6; Gig and Feed Paper Friction, 14x4 and 6x6; Rag Shaft, 1½ in. diam.; Rag Pinion, 6 in. diam.; Feed Shaft, 1½ in. diam.; Spreader, 16 in. diam. Three changers of feed for 3 in. belt.

**CARRIAGE**—20 ft. long, with 6 pair of wheels; Timbers, 4½x5½ in.; Rack, 24 ft. long, 3½x4½ in.; 48 ft. of A Track, and 48 ft. Flat Track, with necessary screws and bolts complete.

**BLOCKS**—Two New Eureka Jr. furnished unless otherwise ordered. Blocks in one piece open in front, to open 42 in. from the saw. The Knees move simultaneously, and remain parallel, assuring even lumber. Blocks are furnished with Steel Pinion, Indicator and Ratchet; 16 ft. of Set Rod, 2½ in., Keyseated entire length. One Excelsior Knight Dog, combining Log and Last-Board Dog.

**INDICATOR**—This is a valuable attachment to Head Block, enabling the operator to tell at a glance the exact distance between the knees and the saw; also indicates how many boards or planks the stick will make.

Portable Track Sills framed in sections, with Track bolted on, will be furnished when ordered, and is not included in regular price, as it is generally furnished by user.

No. 1 Mill, complete.....	\$405.00
Husk Frame, " .....	171.00
Carriage, " .....	90.00
Head Blocks, " .....	144.00

Weight of complete Mill, 4800 lbs.

## NO. 1½ SAW MILL.

Same as the No. 1 Mill, with Top Saw attachment. Complete, \$525.50; weight, 6200 lbs.

## NO. 2 SAW MILL.

Has a capacity of about 25,000 ft. per day; will carry saws up to 66 in. diam., and requires from 35 to 50 horse power.

Price, complete, \$567.00; weight, complete, about 7000 lbs.

## NO. 3 SAW MILL.

This is the same as the No. 2 Mill, with Top Saw attachment.

Complete, \$711.00; weight, 8600 lbs.

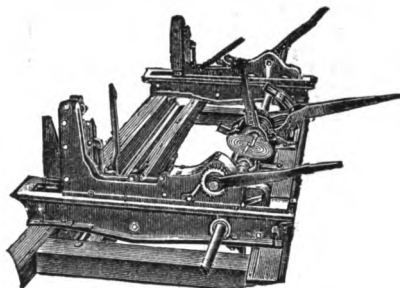


FIG. 5236. EUREKA HEAD BLOCKS.

Furnished with Nos. 2 and 3 Mills, Indicator and substantial Set Works. Eureka Jr. furnished with No. 1 Mill.

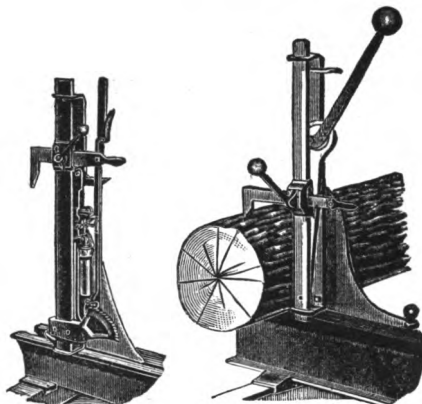


FIG. 5237.

EXCELSIOR DOG. (Right Hand.)

FIG. 5238.

IDEAL DUPLEX DOG. (Right Hand.)

The Excelsior Mill Dog is made in three sizes, is simple and durable. Can be attached to any head block, and used as either a log or last board dog.

Pony Excelsior, per pair (2) .....	\$24.00
Standard " " (2) .....	30.00
Large " " (2) .....	38.00

Ideal Duplex is made in two sizes, used principally for quarter-sawing and holding frozen timber. Can be attached to any head block.

Ideal Duplex No. 2, per pair (2),	\$42.00
" " " 8, " (8),	55.50

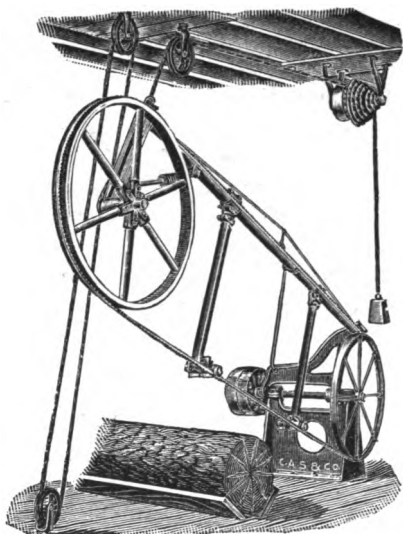


FIG. 5239. BAND CUT-OFF SAW.

This machine is designed for cutting off logs to any length required, such as stock for Shingles or Heading, Veneer or Basket work, Excelsior Wood Pulp,

Lath, Pickets, in fact any cross-cutting of logs or timber that is ordinarily done by circular or drag saw machines.

Among the points of advantage are: The power required is from  $\frac{1}{4}$  to  $\frac{1}{2}$  of that needed by other machines; the log does not need dogging or holding while being cut; the machine requires no foundation or strong fastening, and being perfectly balanced, it is handled easily, and has positive adjustments at all points. It leaves the sawed ends clean and smooth, and considering the power required, it has a cutting capacity far beyond any other device for similar work.

These machines are furnished in five sizes. The 24 in. Machine will take any size log up to 24 in. diam.; the 28 in. Machine, logs up to 28 in. diam., and so on.

Price includes 2 Saws and complete fixtures.

Machine with 48 in. Wheels,	\$355.00
“ “ 36 “ “	288.00
“ “ 30 “ “	238.00
“ “ 28 “ “	220.00
“ “ 24 “ “	190.00

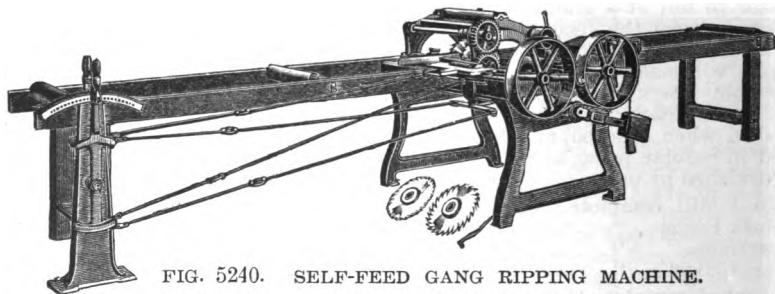


FIG. 5240. SELF-FEED GANG RIPPING MACHINE.

In this machine the Feed Rolls are all driven, making it a strong, positive feeder. The machine is capable of ripping 100,000 ft. of stock lumber in ten hours. Arbor carries two saws; one being stationary, the other adjustable. Feed Works have two changes of speed. Cut represents a right-hand machine.

Price of machine includes 2 Stationary and 2 Movable Collars, and four 14 in. Saws, these allowing the sawyer to keep a set of sharp saws constantly on

hand, and as the process of changing saws is simple and quickly done, sharp saws will be used in preference to dull ones, insuring smoother and nicer work.

No. 1 Machine, \$161.50; saws to 21 in. wide and 3 in. thick; diam. of saws 14 in.

No. 2 Machine, \$192.75; saws up to 30 in wide, 3 in. thick.

No. 3 Machine, \$246.50; saws up to 40 in. wide, 3 in. thick.

Floor space required 19 ft. x 5 ft. 3 in. Weights, 1500, 1600 and 1700 lbs,



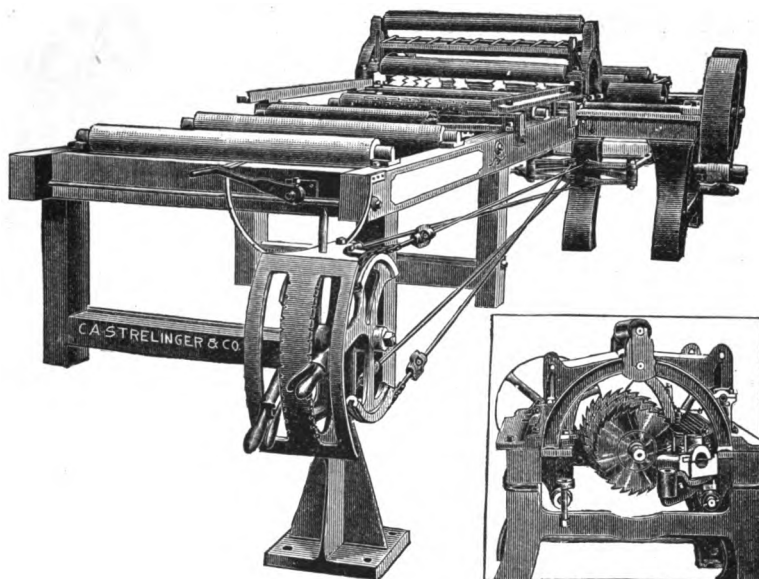


FIG. 5241. HEAVY GANG EDGER.

The cut shows the No. 2 Machine.

The Arbor is 3 inches in diam., double keyseated, and has 3 Bearings, one on each side of the driving pulley and one at the end. An important improvement is the method of removing end box so as to conveniently remove the saws.

No. 1 extra heavy Gang Edger, \$743.75. Will saw 48 in. wide and 6 in. thick. Has 3 Fluted Feed Rolls driven, Double Binder Rolls, front and back. One Stationary and 1 Movable Gauge, 1 Stationary and 2 Movable Saws, and 1 Gang

Collar for 4 saws, making 7 saws in all. Weight, 5200 lbs.

No. 2 heavy Gang Edger, \$637.50. Will saw 48 in. wide and 6 in. thick. Has 2 Fluted Feed Rolls driven. Other equipments same as No. 1. Weight, 4700 lbs.

No. 3. Gang Edger. \$361.25. Will saw 36 in. wide and 5 in. thick. Has 2 Fluted Feed Rolls driven, Binder Roll front and back, 1 Movable Gauge, 1 Stationary and 2 Movable Saws. Weight, 3000 lbs.

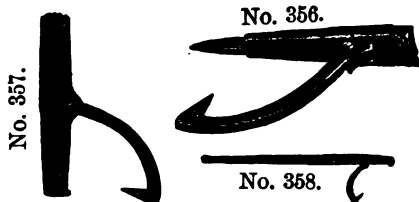


FIG. 5242. CANT HOOKS.

These are furnished with either Hick-

ory or Maple Handles. Orders for less than  $\frac{1}{2}$  doz. take the single price. Order by number.

	Diam.	356	357	358
4 to 6 ft. $x2\frac{1}{2}$ in.		\$19.00	\$16.00	\$14.00 doz.
4 to 6 ft. $x2\frac{1}{2}$ in.		1.90	1.60	1.40 each
4 to 6 ft. $x2\frac{3}{4}$ in.			\$18.00	\$16.00 doz.
4 to 6 ft. $x2\frac{3}{4}$ in.			1.80	1.60 each
Irons complete,		\$15.00	\$13.00	\$11.50 doz.
	without Handle	1.50	1.30	1.15 each

## WAGON AND CARRIAGE MAKERS' TOOLS.

We present here a very complete line of Hub and Spoke Machinery suitable for Carriage and Wagon makers.



FIG. 5243. DOLE'S  
HUB BOXING MACHINE.



FIG. 5244. SILVER'S  
HUB BOXING MACHINE.

The Dole Hub Boxing Machine is an old favorite.

No. 1 is suitable for Buggy and Carriage work, and will grasp hubs from 2 to 6 inches in diam. No. 2, for Buggy, Carriage and Wagon work; hubs from 2 to 12 inches in diam. No. 3, for heavy Wagon work; hubs from 3 to 15 inches in diam. We have these machines in two styles: No. 711, with Silver's Patent Open Adjustable Feed Nut, and No. 712, with Solid Feed Nut. Price of No. 711—No. 1, \$20.00; No. 2, \$23.00; No. 3, \$27.00. Price of No. 712—No. 1, \$16.00; No. 2, \$19.00; No. 3, \$22.00.

The Silver's Hub Boxing Machine (Fig. 5244) is of more recent construction than the Dole. No. 1 will bore holes  $1\frac{1}{2}$  to 5 in. diam.,  $6\frac{1}{2}$  in. deep, and will grasp hubs 2 to 9 $\frac{1}{2}$  in. diam., measuring at the end. Price of No. 1, \$25 00. No. 2 is intended for very large, heavy wheels; will bore  $2\frac{1}{2}$  to 6 in. diam.,  $12\frac{1}{2}$  in. deep, and will grasp hubs 9 to  $14\frac{1}{2}$  in. diam., measuring at the end. Price, \$35.00.

SILVER'S DOUBLE CHUCK TAPER HUB BOXING MACHINE.

(Not illustrated.)

This machine will bore straight or any desired taper; designed for use on large, heavy wheels that are too cumbersome to handle. Will bore 2 to  $5\frac{1}{2}$  in. diam.,  $15\frac{1}{2}$  in. deep. The chucks will grasp hubs 3 to 12 in. diam. Price, \$35.00.

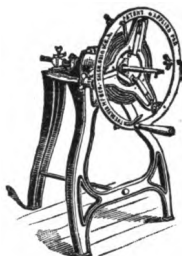


FIG. 5245.  
SILVER'S NEW  
HUB BORING MACHINE.  
HAND POWER.

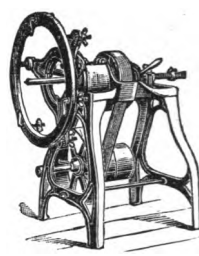


FIG. 5246.  
SILVER'S NEW  
HUB BORING MACHINE.  
POWER OR HAND.

Fig. 5245 is a Hand machine that will bore straight or any desired taper, and cut all necessary recesses, including that at the spokes.

No. 2, \$35.00, for light and medium work up to  $7\frac{1}{2} \times 10$  in. hubs; weight, 100 lbs. No. 3, \$45.00, for light and heavy work up to  $9\frac{1}{2} \times 13$  in. hubs; wgt., 170 lbs.

Fig. 5246 represents a machine similar in style to the foregoing, having the same capacity as No. 2, but heavier, and stronger. Is intended to use by power, but is adapted also to hand use.

Price, \$75.00; weight, 325 lbs.



FIG. 5247. STAR HOLLOW AUGER.

This is a strong, heavy Hollow Auger which we furnish only in the larger sizes. No. 3, \$15.00, cuts tenons  $\frac{3}{4}$  to  $1\frac{1}{2}$  in. diam. No. 4, \$20.00, cuts tenons  $1\frac{1}{2}$  to 2 in. diam.

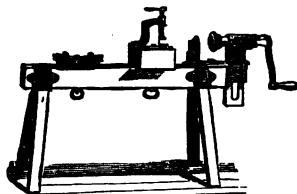


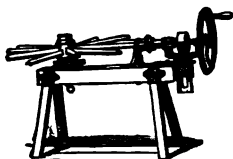
FIG. 5248.  
DOLE AND DEMING PATENT SPOKE  
TENONING MACHINE.

This machine is made in three sizes. The hub is held in the self-centering chuck, which can be revolved to present

the spoke to the hollow auger. All the tenons are cut with the shoulders uniform in width and in the same plane. Can be easily changed into a boring machine for boring the felloes for the spoke, thus insuring accuracy.

No. 1, cuts tenons  $\frac{1}{8}$  to 1 in., \$18.00; with Felloe Boring Attachment, \$25.00.  
No. 2, cuts tenons  $\frac{1}{4}$  to 1½ in., \$25.00; with Felloe Boring Attachment, \$32.00.  
No. 2½, cuts tenons  $\frac{1}{2}$  to 1½ in., \$28.00; with Felloe Boring Attachment, \$35.00.

Can furnish with the Nos. 2 or 2½, at an extra cost of \$8.00, a No. 1 Auger and Reducer, so that work down to  $\frac{1}{16}$  in. may be done.



NO. 5249. D. & D. SPOKE TENONING MACHINE NO. 3.

This machine is quite similar in its working parts to the foregoing style, but is somewhat heavier; is intended for power or hand use.

No. 3, \$45.00, cuts tenons  $\frac{1}{8}$  to 1½ in. diam., 4 in. long.

No. 3½, \$50.00, cuts tenons  $\frac{1}{8}$  to 1½ in. diam., 4 in. long.

No. 4, \$60.00, cuts tenons  $\frac{1}{4}$  to 2 in. diam., 6 in. long.

No. 4½, \$68.00, cuts tenons  $\frac{1}{4}$  to 2 in. diam., 6 in. long.

The above prices include Felloe Boring Attachment. If not wanted deduct \$7.00 from price of each machine.

Nos. 3 and 3½ machines can be furnished to cut tenons 6 in. long, at an additional cost of \$5.00.

Countershaft, with Tight and Loose Pulleys, suitable for any of the above size machines, \$10.00.

## HYDRAULIC PRESS.

These presses are made in two sizes. No. 1, price \$50.00, has a capacity of 12 tons pressure, weight 180 lbs. Can be operated by hand or power, and will raise 4 in. Manufacturers of light wagons and carriages will find this very

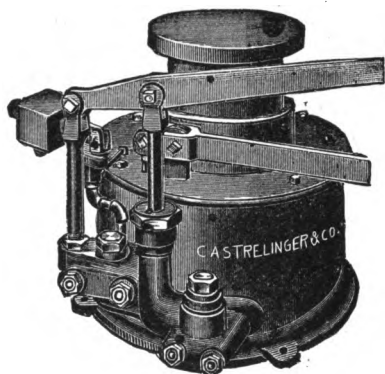


FIG. 5250. HYDRAULIC PRESS.

useful for pressing on skeins and hub bands, and for pressing in boxes. Can be used to advantage for other purposes where pressure is required.

No. 2, price, \$110.00, weight 600 lbs., will raise 6 in.; intended for heavy work on farm and freight wagons, and for other purposes where great pressure is required. Can be operated by hand or power; has a capacity of 50 tons pressure.

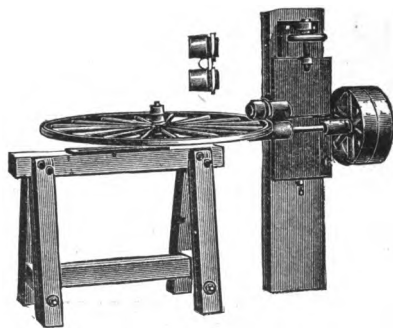


FIG. 5251. PATENT TIRE-TRUER.

This device is intended to true a tire with the felloe on carriage and wagon wheels, after the tire has been shrunk on. It saves considerable labor, does better work, and can be operated by a boy of ordinary intelligence.

Rolls are 4 inches in diam., made of hardened steel, and all parts are strong and substantial. Price, \$55 00, weight, 400 lbs.

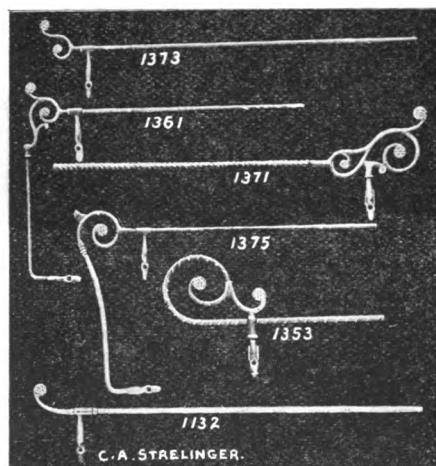
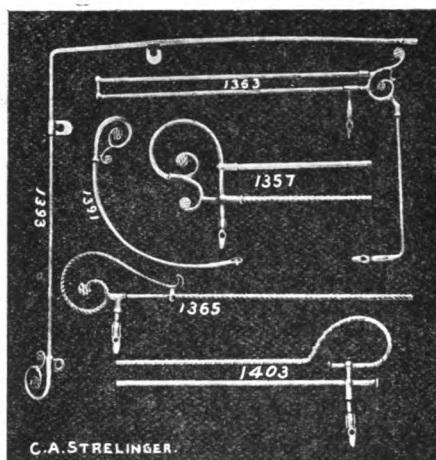


FIG. 5252. CARRIAGE RAILS.

These Rails are heavily coppered and nickel plated. Cuts show one-half of Rail. Prices are subject to a discount according to quantity. In ordering, give curve of dash.

## ADJUSTABLE RAILS.

No. 1192, \$0.32; 1361, \$0.54; 1363, \$0.80  
 " 1365, 1.10; 1371, .78; 1373, .40  
 " 1375, .60; 1391, .40; 1393, .86

Adjustable Rails are 30 in. between screw holes; can be cut down.

## SOLID RAILS.

No. 1353, \$0.68; No. 1357, \$1.40; No. 1403, \$0.80.

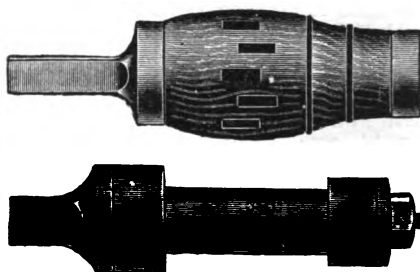
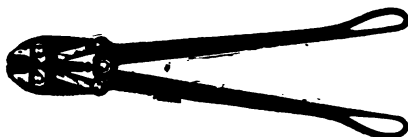


FIG. 5253. BALL BEARING AXLES.

Ball Bearing Axles are a demonstrated success just as much as the Bicycle is. Friction is reduced to minimum; they are clean, neat and durable, dust and water-proof. Wheels can be taken from and put on the axle as quickly as on an ordinary axle, and without disturbing the adjustment. They can be put into old wheels. Parts subject to wear are made of tool steel and are interchangeable.

Vehicles fitted with Ball Bearings require less than one-half the power to propel, are always ready for service (not requiring the careful oiling and adjustment of leather washers as with a common axle), are more comfortable to ride on, and free from wheel grease.

We believe that we have the best Ball Bearing Axle in the market. Circular and prices will be mailed upon application.

FIG. 5254.  
BOLT AND RIVET CLIPPER.

This style of Bolt Clipper is coming into very general use; is strong and substantial, simple and easy of adjustment. Made in three sizes.

No. 3, cuts  $\frac{1}{2}$  in. or less; price, \$3.90  
 " 4, "  $\frac{3}{4}$  " " " " 5.75  
 " 5, " 1 " " " " 8.00

## OTHER MACHINERY.

We can furnish complete outfits of Machinery for the manufacture of Hubs, Spokes, Felloes, and all Wagon, Plow and other Wood Work. The following cuts are simply put in as suggestions, and comprise but a small portion of the line. Full description of any of these machines furnished upon application.

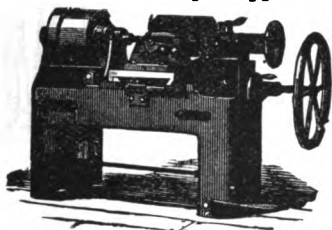


FIG. 5246.  
PATENT AUTOMATIC HUB TURNING  
AND FINISHING MACHINE.

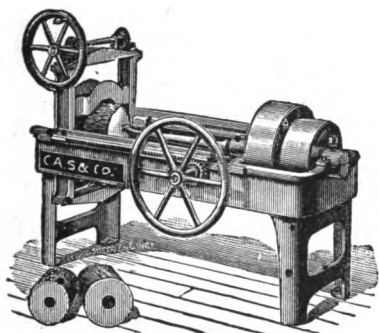


FIG. 5247.  
NO. 1 HEAVY HUB BORING MACHINE.

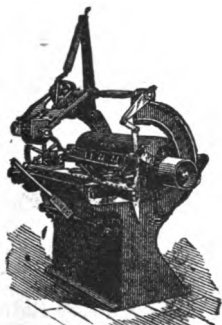


FIG. 5248. AUTOMATIC SPOKE LATHE.

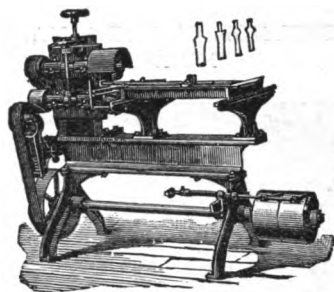


FIG. 5249.  
HEAVY DOUBLE SPOKE TENONING  
MACHINE.

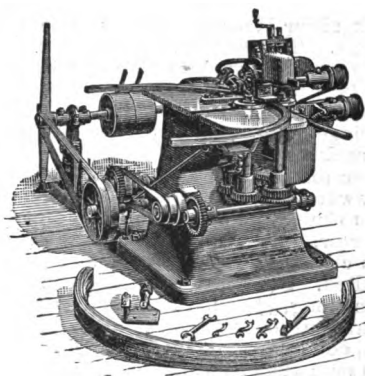


FIG. 5250.  
TWO-SIDE FELLOE PLANING  
MACHINE.

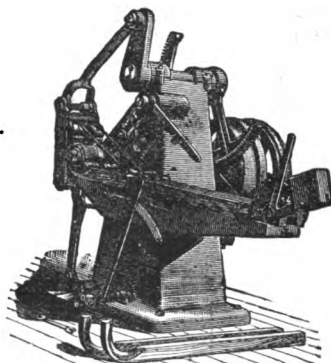


FIG. 5251.  
PLOW HANDLE BENDING MACHINE.

## EXCELSIOR CUTTING MACHINERY.

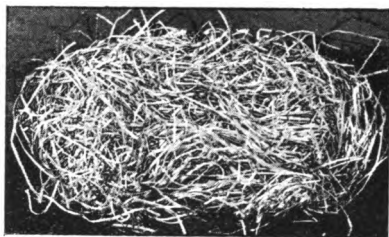


FIG. 5252. EXCELSIOR.

Excelsior Wood Shavings are a staple article. Thousands of tons are made daily, and the various uses to which it can be put are constantly increasing. Is used by upholsterers, furniture and carriage makers, etc., etc.; is also used for packing all kinds of glassware, toys, confectioners' and druggists goods, hardware, and other articles too numerous to mention, and is much preferred to straw, hay and similar substances, as it is clean, odorless, elastic, and easily handled. Standard Excelsior is about 16 in. long,  $\frac{1}{16}$  in. thick, and is made in three grades: Fine,  $\frac{1}{4}$  in.; Medium,  $\frac{1}{2}$  in., and Coarse,  $\frac{3}{4}$  in. wide. For common uses such as packing, Excelsior is often cut thicker. Any wood can be used that is free from gum and knots (must be dry). Stock can be used which is too small for saw timber, and is not considered of much value, such as white poplar, cottonwood, white spruce, or silver leaf poplar, and these woods make the best quality of Excelsior. A cord of wood will produce about one ton of Excelsior.

It will be understood that in order to produce Excelsior at a minimum cost as many machines as possible should be run by one man. One Excelsior manufacturer writes us that his Excelsior costs him for cutting and baling \$1.65 per ton.

Excelsior Machine No. 1 has a capacity of from 600 to 800 lbs. of Excelsior per day, according to coarseness and the quality of timber that is being cut. One man can run six machines. Each machine has two forms to hold spurs; dividers in one for coarse Excelsior,

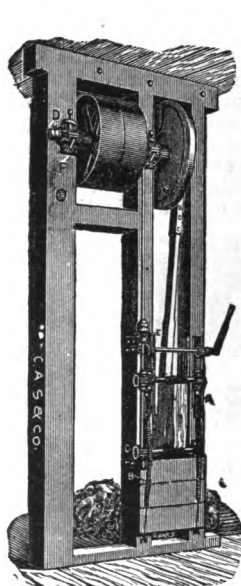


FIG. 5253.  
EXCELSIOR  
MACHINE NO. 1.

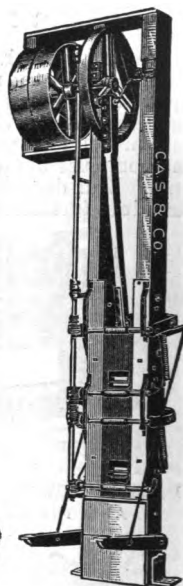


FIG. 5254.  
EXCELSIOR  
MACHINE NO. 2.

spurs to fill both forms, and two knives. Price, complete, \$130.00, weight, 1200 lbs.

Excelsior Machine No. 2 is somewhat similar in style to No. 1, but is adapted to cutting two blocks at the same time, and therefore has about twice the capacity, which is an advantage in cases where space is limited. One man can run three or four of these machines. Neither this nor the foregoing machine requires skilled labor, just a little practice. Price includes 4 Knives, 4 Cutter Heads, and Spurs to fill the Heads.

Price, \$185.00; weight, 1600 lbs.

## BALING PRESS.

For those who have not more than six Single or three Double Machines, a Screw Press is often used. We carry in stock all sizes of Press Screws (see index), and it is quite an easy matter to make the frame. When desired, we can furnish a large, heavy Baling Press with a capacity of from 8 to 10 tons per day. Price, \$275.00; weight, 3200 lbs.

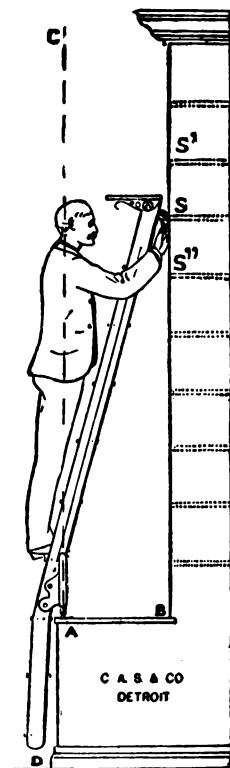
## SLIDING LADDERS.



FIG. 5255.



FIG. 5256.



The use of Sliding Ladders in Stores and Warehouses is becoming quite general. Sliding Ladders have many advantages over ordinary Ladders, and they are a great convenience and time-saver. We have had them in use for upwards of twelve years, and could not afford to be without them at ten times their cost.

We can furnish them in two styles: Fig. 5255, which rolls facing the shelves, and Fig. 5256, which rolls facing the aisle. These Ladders move easily, look well, are never out of order, nor in the way. They have Roller Bearings and Anti-Friction Wheels, and are practically noiseless.

In ordering Nos. 1 and 2 Ladders and Track, give distance from D to C, D to A, A to B, B to S, B to S', and B to S''. State length of Track wanted, and the No. of uprights there are of all kinds

in shelving; also state what they are, whether solid, upright partition boards, turned spindles, or whether iron brackets are used. Send sketch of front and end views, and give full particulars.

No. 1 Ladder, yellow hard Pine, Japanned Mountings, \$11.30 each; Nickel Mountings, \$13.35 each.

Oak Ladders, Japanned Mountings, \$12.65; Nickel Mountings, \$14.65.

No. 2 Ladders are same as No. 1, with the exception that they are straight instead of being bent at bottom—they take up a little more room in the aisle. Price is \$1.00 less on each Ladder.

Nos. 3 and 4 Ladders are of the same style as the others, but the Track is placed on the floor entirely independent of the base. This style is preferred by many, particularly where the base shelf is narrow. Prices are the same as for the others.

**TRACK****FOR NOS. 1, 2, 3 AND 4 LADDERS.**

Prices include Rail for bottom, and Guide Pole for top, complete with all necessary Brackets, Screws, Pole Ends, etc., finished ready to be put up with a screw driver.

Bronzed Steel Rail, with Black Japanned Brackets, 32 cts. per ft.

Nickel-plated Rail with Nickel-plated Brackets, 42 cts. per ft.

**NO. 5 LADDERS AND TRACK.**

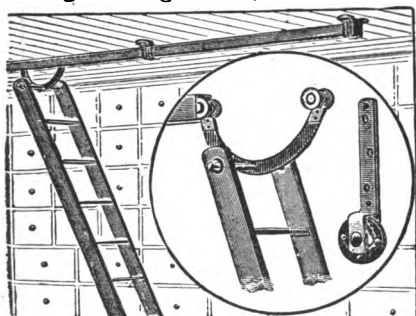
This style is shown in Fig. 5256. Yellow Hard Pine Ladders, Japanned Mountings, \$10.00.

Oak Ladders, with Fancy Openwork Sides, Japanned Mountings, \$14.00.

Double Steel Track with Wood Centers, complete with Hangers, Screws, etc., 32 cts. per ft.

Wood Ceiling Strip, 7 cts. per ft. We might suggest that any suitable strip of wood, 5 in. wide, will answer the purpose, and can usually be supplied by customer, and save freight charges.

For No. 5 Ladders, give the height of ceiling and length of Track wanted.

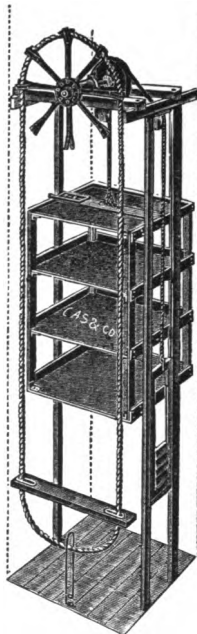


**FIG. 5257. TROLLEY LADDER FIXTURES AND TRACK.**

We show here a style of Track and Fixture suitable for Ladders of form shown in Fig. 5256. We sell these Fixtures separately, the Ladder to be furnished by the user. A set of Fixtures consists of one steel Ladder Crescent, with 2 Ball Bearing Trolleys attached, 2 Roller Bearing Wheels for bottom of Ladder, and 1 pair Angle Irons.

Price for Fixtures complete, \$5.00.

Steel Trolley Track for the above, complete, 24 cts. per ft.

**DUMB WAITERS AND ELEVATORS.**

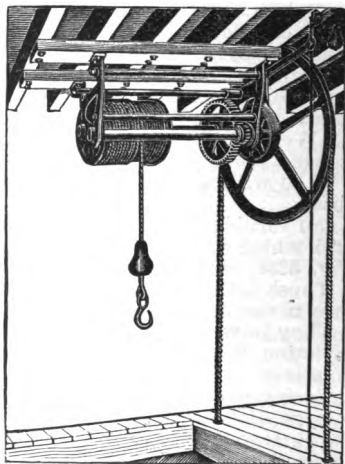
**FIG. 5258. DUMB WAITER.**

The cut shows one style. We have six other styles and over thirty sizes.

We handle what we believe to be the most complete and perfect line, now manufactured, of Dumb Waiters, Dumb Waiter Fixtures, Hand Elevators, Carriage and Warehouse Elevators, Hatchway and Out-Rigger Hoists, and Sidewalk Hoists.

Can furnish Dumb Waiter Fixtures from \$10.00 upwards, and Dumb Waiters, complete, from \$26.00 upwards. Hand Elevator Fixtures from \$35.00, and Hand Elevators, complete, from \$75.00.

To those interested we will be pleased to send our 24 page Elevator catalogue, which is fully illustrated and descriptive.



**FIG. 5259. HOISTING RIG.**



## SHELF HARDWARE.

Although we have not mentioned the fact elsewhere in this catalogue, we carry a very complete line of Shelf Hardware. The subject of Shelf Hardware is a broad one, and we do not mean to go into it here any more than to show a small but choice line of Locks, and two or three other items.

We are impelled to show these goods for the reason, that it is difficult to find in most places anything like a complete line of high-grade goods. We have in past years furnished a great many goods of this class to manufacturers, institutions and clubs.

In this connection we might say, that we will be pleased to furnish any information in our power in regard to any kind of goods in this class.

## YALE LOCKS.

The Locks shown here are the celebrated Yale Locks, of the latest improved varieties, with the German Silver Yale Paracentric Keys. No two locks alike (unless especially ordered).

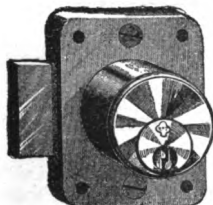


FIG. 1948.

NO. 511  
CUPBOARD  
LOCK.

Size  $2\frac{1}{2} \times 1\frac{1}{2}$ , for either  $\frac{3}{4}$ ,  $\frac{1}{2}$  or  $1\frac{1}{2}$  in. thick wood. Ea., \$1.10; doz., \$11.00; postage, 6 cents.

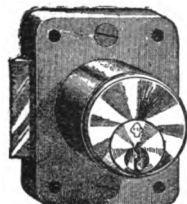


FIG. 1949.

NO. 511S.  
SPRING  
CUPBOARD  
LOCK.

Same as above, but with Spring Bolt. Each, \$1.35; per doz., \$13.50.

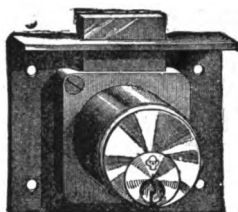


FIG. 1950.

No. 561,  
DRAWER  
LOCK.

Size  $1\frac{1}{2} \times 2\frac{1}{2}$ , for either  $\frac{3}{4}$  or  $\frac{1}{2}$  in. wood. Each, \$0.90; doz., \$9.00.

We have the above style of Lock in smaller size,  $1\frac{1}{2} \times 2$  in. Each, \$0.75; per doz., \$7.50. This is one of the most popular Locks we have.

FIG. 1951.  
SPRING  
DRAWER  
LOCK.

Same as Fig. 1950. Each, \$1.00; doz., \$10.50.

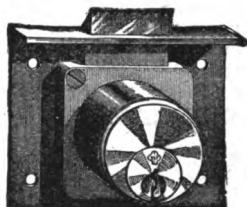


FIG. 1952.

No. 541,  
DESK AND  
CHEST.

Size  $1\frac{1}{2} \times 2\frac{1}{2}$ , for either  $\frac{3}{4}$  or  $\frac{1}{2}$  wood. Each, \$1.10; doz., \$11.00.

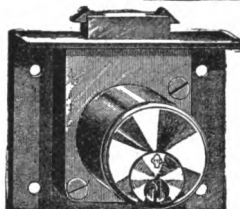


FIG. 1953.

NO. 5241, CHEST AND DESK. Size  $1\frac{1}{2} \times 3$ , for  $\frac{3}{4}$  and  $\frac{1}{2}$  wood. Each, \$1.20; per doz., \$12.00.

## MASTER AND PASS-KEY WORK.

In many places where large numbers of locks are used, it is desirable to have either Pass or Master-Keyed Locks. By Pass-Keyed Locks is

meant that the keys are all alike; this saves carrying about a heavy bunch of keys. Master-Keyed Locks are locks that are arranged in sets of any given number, all of the locks being different, and having keys of their own, the set being furnished with one or more master keys that will open any of the locks. Following is the system as used in our factory:

The different foremen in the Machine, Casting, Tool Room, Engine, Draughting, Pattern-Making, and other departments, have keys of the various locks used in their departments. The superintendent, officers and watchman carry two or three Master Keys, fitting practically every lock in the building.

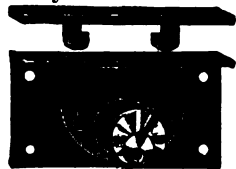


FIG. 1954.  
No. 521,  
HEAVY CHEST  
LOCK.

Size 2x4, for  
either 1½, 1½  
or 1½ wood.  
Each, \$1.85;  
per doz., \$19.50. Postage, 12 cents.

#### PLAIN CYLINDER LOCKS.

These Locks are also made by Yale & Towne, having plain cylinders and a different style of key. They are secure, and well adapted to many classes of work. Like the locks before mentioned, they are all brass.

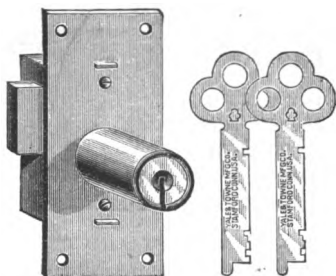


FIG. 1955. CUPBOARD LOCK.

No.	Each.	Per Dozen.	Size.
WA-102	\$0.45	\$4.80	2½x1½
WA-102	.50	5.40	3x1½
WA-104	.55	6.00	3½x2
WA-106	.65	7.20	4x2½

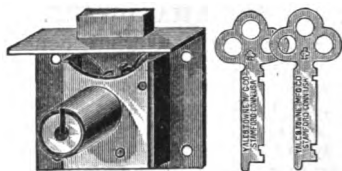


FIG. 1956. DRAWER LOCK.

No.	Each.	Per Dozen.	Size.
RA-296	\$0.30	\$3.00	1½ in.
RA-302	.40	4.00	2 "

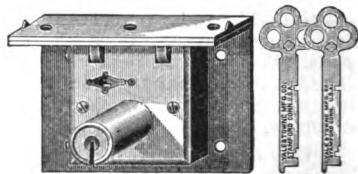


FIG. 1957. CHEST LOCK.

No.	Each.	Per Doz.	Size.
SA-150	\$0.40	\$4.20	1½ in.
SA-151	.45	4.50	1½ "
SA-152	.55	5.40	2 "
SA-153	.65	6.80	2½ "
SA-155	.85	8.40	3 "
SA-156	.95	9.60	3½ "
SA-157	1.10	10.80	4 "

All numbers to SA-153 are made for ¾ inch wood; SA-155 and 156, for 1, 1½ and 1½; and SA-157, for 1½, 1½ and 1½ inch wood.

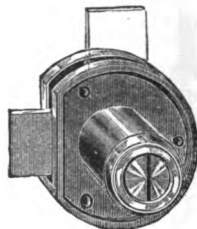


FIG. 1958.  
UNIVERSITY  
DRAWER  
AND CUPBOARD  
LOCK.

Is especially adapted for lockers or closet doors. In drawer locks the bolt projects ½ inch; in cupboard, 1 inch. Can be furnished to order with bolt of any required length.

Cupboard.	Drawer.	Wood.	Each.	Doz.
5034	34	¾ in.	\$0.85	\$9.00
5078	78	¾ "	.85	9.00
5054	54	1½ "	.95	10.00

These locks Master Keyed cost \$2.00 per dozen extra.

## COMBINATION LOCKS.

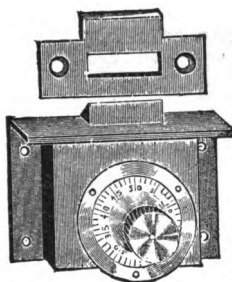


FIG. 1959. COMBINATION SPRING DRAWER OR CUPBOARD LOCK.

No. 181. Size  $2\frac{1}{8}$ , all brass, heavy. Each, \$1.35; dozen, \$13.50.

FIG. 1960. COMBINATION CHEST LOCK.

No. 189; size  $3 \times 2\frac{1}{4}$ , all brass, heavy. Each, \$1.75; dozen, \$18.00; postage, 15 cents.

No. 187; size  $4 \times 2\frac{1}{4}$ . Each, \$2.25; dozen, \$24.00; postage, 20 cents.

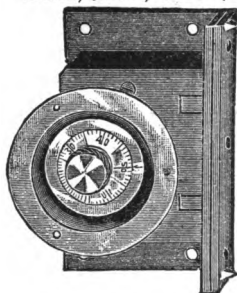


FIG. 1961.

## CHAMPION CASH OR DEED BOXES.

These Boxes are extra heavy, well finished, and provided with Combination Lock. The measurements given are inside.

No.	Each.	Size.
9	\$3.00	$9 \times 6 \times 3\frac{1}{4}$
10	3.20	$10\frac{1}{4} \times 7 \times 4\frac{1}{4}$
12	3.40	$12 \times 8 \times 5\frac{1}{4}$
14	3.85	$14 \times 10 \times 6\frac{1}{4}$
16	4.25	$16 \times 11\frac{1}{4} \times 4\frac{1}{4}$

## LOCKS AND LATCHES.

The Yale Locks shown here are the latest improved pattern, with German Silver Yale Paracentric Keys. They are without a doubt, the best goods of this class now on the market. Any of these locks can be furnished with extra keys, and Pass or Master keys.

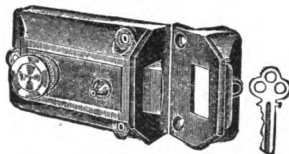


FIG. 1962. RIM NIGHT LATCH.

Size,  $2\frac{1}{8} \times 3\frac{1}{8}$ , three keys. If reversed bevel is wanted, it must be stated in order.

No. 42, \$1.50; Japanned iron case. No. 52, \$2.75; all bronze.

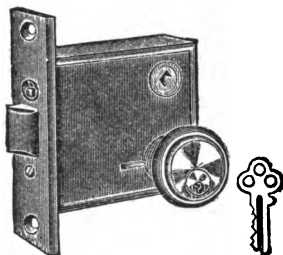


FIG. 1963. MORTISE NIGHT LATCH.

No. 6, \$2.50; operated from without by key, and from within by small bronze knob.

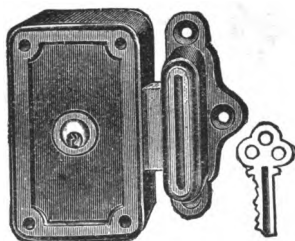


FIG. 1964. STORE DOOR LOCK.

No. 12, \$2.75;  $4 \times 2\frac{1}{4}$  inches. No. 4, \$3.25;  $5 \times 3$  inches.

# BOHANNAN LOCKS AND LATCHES.

These goods are of most excellent quality, and, excepting the Yale, are the best made goods we know of.

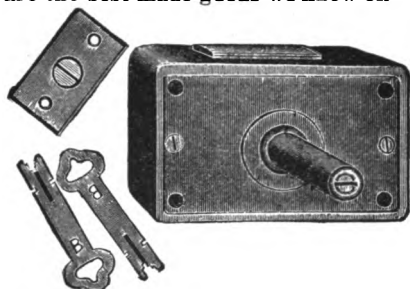


FIG. 1965. RIM STORE DOOR LOCK.  
No. 199, \$2.00. Size  $4\frac{1}{2} \times 2\frac{1}{2}$ ; 7 tumblers, bronze bolt and knob. Opens and locks from inside without key.

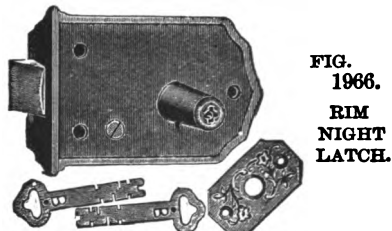


FIG. 1966.  
RIM NIGHT LATCH.  
No. 156, \$.75; iron bolt, brass knob.

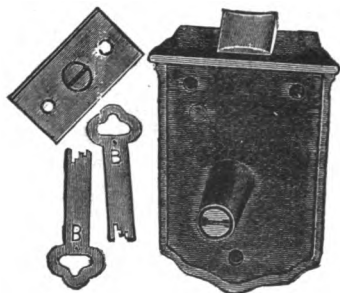


FIG. 1967. RIM NIGHT LATCH.  
No. 165, \$1.00; heavy bronze bolt, brass knob, has 4 tumblers. Can furnish this latch made of all bronze metal; price, \$1.75.

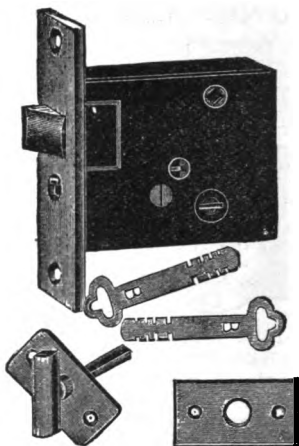


FIG. 1968. MORTISE NIGHT LATCH.  
No. 175, \$1.65; bronze bolt and knob.

SHUT THAT DOOR! BUT  
DON'T SLAM IT!!!

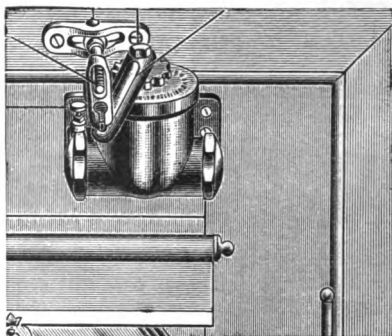


FIG. 1969.  
BLOUNT DOOR CHECK AND SPRING.

We have sold hundreds of these, and believe them to be the best Check and Spring ever placed on the market.

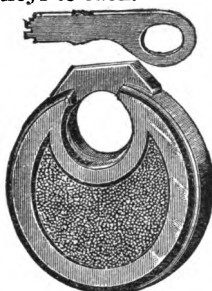
Size A, \$3.20; used for Light Doors.

" B, 4.00; " " Medium "  
" C, 4.80; " " Heavy "  
" D, 6.40; " " Extra "

*Descriptive Catalogue Free.*

**PADLOCKS.**

All Pad-Locks are priced with 2 keys to each.



This style of Lock is used largely by the U. S. Government, in various Departments, is a good lock and very reasonable in price; made in but one size, 2½ inch. Each, \$0.60; per doz., \$6.00.

FIG. 1970. CHAMPION 6-LEVER.

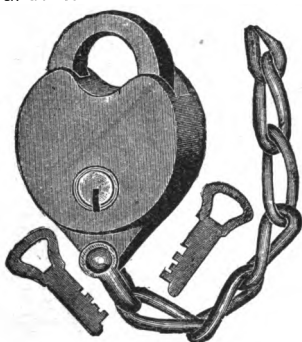


FIG. 1971.

**BRONZE METAL SPRING PADLOCK.**

The above cut represents a style of Padlock that is very popular for general purposes. They are very strong and secure, having three tumblers. The sizes given are in width, the most commonly used sizes being the 2 and 2½ inch.

**PRICES, PLAIN.**

No.	071	072	073	074	078
Size,	1½	1½	1½	2	2½
Each,	\$0.45	\$0.65	\$0.75	\$0.85	\$0.95
Doz.,	4.80	6.80	7.80	8.60	9.40

**PRICE, WITH CHAIN.**

No.	071-A	072-A	073-A	074-A	078-A
Size,	1½	1½	1½	2	2½
Each,	\$0.55	\$0.75	\$0.85	\$0.95	\$1.05
Doz.,	5.60	7.80	8.80	9.60	10.40

**EXTRA SMALL AND EXTRA LARGE PADLOCKS.**

We carry in stock a line of both small and large locks, same style as shown in Fig. 1971, but with brass keys. These are of most excellent quality, and can be depended upon both for security and strength.

**PRICES, PLAIN.**

No.	1	0	A	82	92	96
Size,	¾	¾	1	2½	2½	3 in.
Each,	\$0.25	\$0.28	\$0.30	\$0.90	\$1.65	\$2.20
Doz.,	2.80	2.90	3.05	9.40	17.20	23.20



FIG. 1972. AUTOMATIC.

This is the best cheap lock that we know of. Although very low in price, it is well made and durable. Made in two sizes, about 1½ and 2 in. in width. The 1½ inch lock is used for Bicycle and similar purposes, the 2 inch for general purposes.

No. 406, each, \$0.30; dozen, \$3.00; steel, dark finish; size, 2 inch.

No. 398, each, \$0.25; dozen, \$2.50. Same as No. 406, but 1½ inch.

No. 407, each, \$0.45; dozen, \$4.50. Same as No. 406, but brass.

No. 400, each, \$0.35; dozen, \$3.50. Same as No. 398, but brass.

No. 3980, same as 398, but with 2 ft. chain for bicycles. Each, \$0.45; dozen, \$4.50.

No. 411, same as 400, but nickel-plated on brass, and with chain for bicycle. Each, \$0.60; dozen, \$6.00.



FIG. 1973. SPECIAL LOCK.

This Lock has very large shackle; is used largely for grating and special iron work; three tumbler; size, 2½ inch; made of cast bronze metal.

Each, \$0.95; doz., \$10.20.

With chain, add 15 cents, or \$1.25 per dozen.

**CHEST TRIMMINGS.**

We show here a small line of goods suitable for Tool and other Chest trimmings.

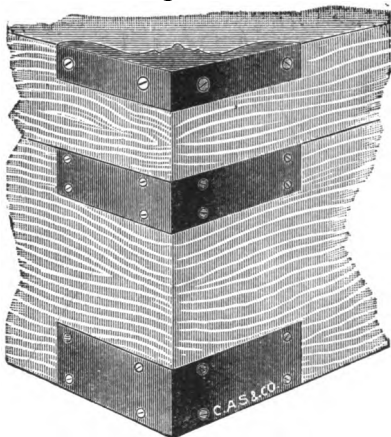


FIG. 1974. CHEST CORNERS.

Nothing adds to the appearance—and strength as well—of a handsome Tool Chest as these Metal Corners. They are made of solid bronze metal, heavy, handsomely finished and polished. We have lately changed the style of the bottom corner, making it wider, so that it extends further up than the cut shows.

Set No. 1, \$3.60 (12 pieces); suitable for medium Chests.

Set No. 2, \$4.00 (12 pieces); suitable for medium and heavy Chests.

Set No. 3, \$4.75 (8 pieces); suitable for heavy Chests.

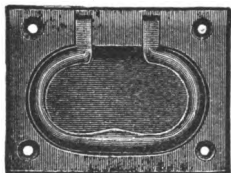


FIG. 1975.  
FLUSH CHEST  
HANDLES.

No. 100, per pair, \$2.00; heavy, genuine bronze metal; size, about  $3\frac{1}{4} \times 4\frac{1}{4}$  in. Strong and handsomely finished. Surface Chest handles same as above, per pair, \$1.75.

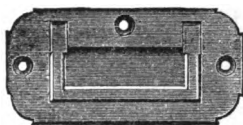


FIG. 1976.  
FLUSH  
BRASS  
HANDLES.

Size,	$3\frac{1}{4}$	4	$4\frac{1}{4}$ in.
Per Pair,	\$0.80	\$0.90	\$1.10



FIG. 1977.

RABBETTED STOP CHEST HINGES,  
BRONZE METAL.

One size only, suitable for medium and heavy Chests. Per Pair, \$2.00.

**IMITATION TRUNK TRIMMINGS.**

We have had a good many inquiries from certain localities for Trunk Trimmings and understand that some railroads do not allow tool chests to go as baggage, unless fitted out to look like trunks. We can furnish these trimmings in sets, the following comprising a set: 3 Hinges, 8 Corner Plates, 4 Center Plates, 2 Clasps or Bolts for Face of Chests, 1 Brass Lock (extra quality), 2 Keys, 4 Loops, 2 Stitched Harness Leather Handles, suitable Nails, etc.

Set No. 1, for medium and small chests; price, complete, \$2.50.

Set No. 2, for large chests; price, complete, \$3.00.

**CABINET TRIMMINGS.**

These goods are beautiful in design and finish. We carry in stock Gold Finish only. The styles are constantly changing, and the above illustrations merely give an idea of style. Orders will be filled with styles as near like cuts as possible.

As an aid in making selections we print sizes over all, giving first length then depth.

## DRAWER PULLS OR HANDLES.

Number.	Each.	Dozen.	Size.
2 Large.....	\$0.50	\$5.00	5½x2½
3L Large.....	.30	3.00	5½x2½
1L Large.....	.30	3.00	5x3½
1R Medium.....	.20	2.00	4½x3
20 Large.....	.45	4.50	6x3
3R Medium.....	.20	2.00	4½x2½
9 Medium.....	.34	3.40	4½x3
27 Small.....	.23	2.30	3½x2½
26 Small.....	.24	2.40	2½x3½
3S Small.....	.20	2.00	3x2½
25 Small.....	.25	2.50	2½x3½
21 Medium.....	.30	3.00	5x2½
4444 Medium.....	.25	2.50	5½x2
4444L Large.....	.35	3.50	7½x2½
4545 Medium.....	.25	2.50	5½x1½
4242 Large.....	.25	2.50	5½x2½
3737 Small.....	.18	1.80	3½x2½
4040 Small.....	.12	1.20	3½x1½

Number.	Each.	Dozen.	Size.
114S Small.....	\$0.15	\$1.50	4x1½
5556 Small.....	.10	1.00	3½x1
3535 Small.....	.14	1.40	3½x2½
42 Small.....	.20	2.00	3½x1½

## ESCUTCHEONS.

Number.	Each.	Dozen.	Size.
10	\$0.12	\$1.20	1x4½
5	.10	1.00	¾x4½
9	.09	.90	1x4½
6	.09	.90	4x1½
3	.10	1.00	4½x1½
12	.08	.80	3½x1½
13	.09	.90	2½x1½
7	.08	.80	2½x1½

## TOILET SCREWS.

No. 1, \$0.20 each; \$2.00 per doz. No. 2, \$0.19 each; \$1.90 per doz.

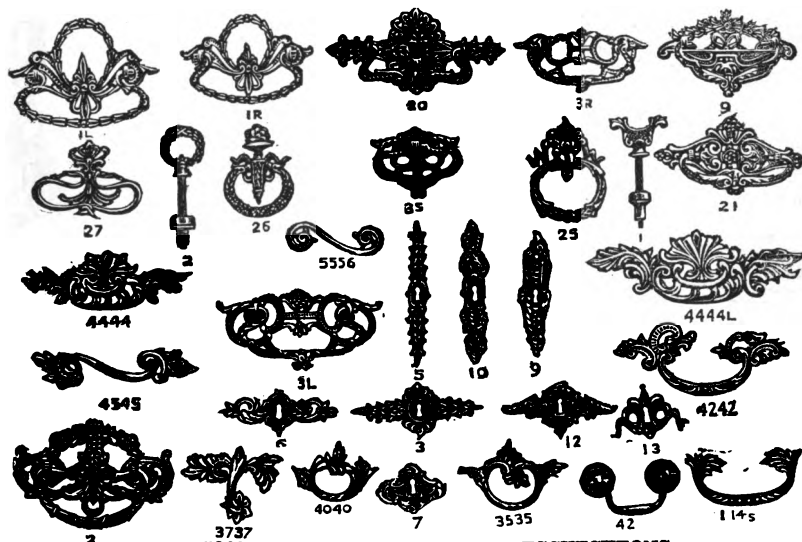


FIG. 5260. DRAWER PULLS AND ESCUTCHEONS.

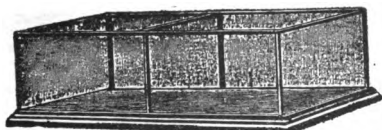


FIG. 5261. SHOW CASE.

These Cases are made entirely of wood and glass, there being no metal to tarnish. It is the most popular style of Case used at present. Furnished in Walnut, Oak, Ash, Cherry or Mahog-

any finish. Height from 12 to 23 in. Glass double thick French throughout. Width of glass on top 24 in.

Price, per ft., for Cases 6 ft. long or over, 12 in. high, \$2.10; 17 in. high, \$2.52; 19 in. high, \$2.64; 21 in. high, \$2.76; 23 in. high, \$2.88. For Cases 4 and 5 ft. long add 18 cts. per ft.

Complete catalogue showing Cases and Fixtures for Jewelers, Clothiers, Druggists, Cigar Dealers, etc., etc., sent to any address on receipt of 4 cts, to cover postage.

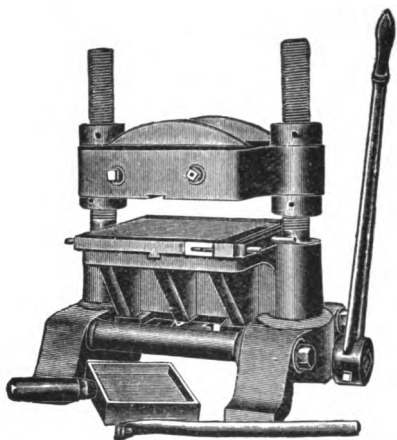


FIG. 5262.

**LETTERING AND STAMPING PRESS.**

Used in Book Binderies, also for embossing in gold on Cigar Box Covers and similar work. Can be heated by steam, gas or gasoline.

Hand Machine, \$85.00; for Power, \$100.00; Extra for Gasoline Heater, \$15.00.



FIG. 5263.

**BAND SAW FILING AND SETTING VISE WITH REELS.**

This is a style of Vise and Reel very commonly used. Vise only, \$5.50; Vise with Reel, Standards, etc., \$11.00.

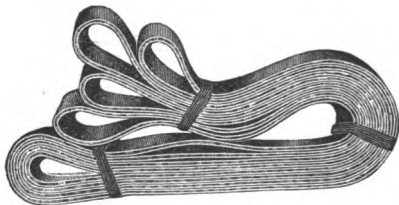


FIG. 5364. RUBBER BANDS FOR BAND SAW WHEELS.

Can furnish these in all sizes and styles, with Cloth Insertion; Cloth One Side or Cloth Both Sides. All orders filled with cloth insertion unless other-

wise specified. Prices given are for Single Bands.

**3-16 INCH THICK.**

26x1½	26x1½	26x2	28x1½	28x1½	28x2
\$1.60	\$1.86	\$2.12	\$1.71	\$2.00	\$2.28
30x1½	30x2	32x1½	32x2	34x1½	34x2
\$2.14	\$2.44	\$2.28	\$2.60	\$2.40	\$2.75
36x2	36x2½	38x2	38x2½	40x2	40x2½
\$2.93	\$3.66	\$3.10	\$3.87	\$3.26	\$4.07
42x2	42x2½	42x3	44x2½	44x3	
\$3.42	\$4.27	\$5.13	\$4.48	\$5.37	

**THICKER BANDS.**

For Bands ½ in. thick add 33½ per cent to above prices; for ⅝ thick, add 66½ per cent, and for ¾ thick, 100 per cent.

Intermediate widths and lengths take proportionate prices.

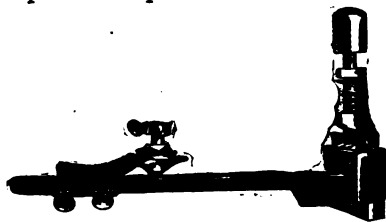


FIG. 5265. CIRCULAR SAW SET.

Suitable for Saws up to 30 in. diam. An excellent tool, price, \$7.50.

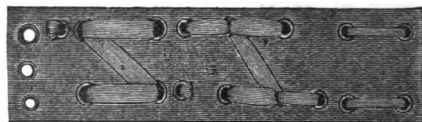
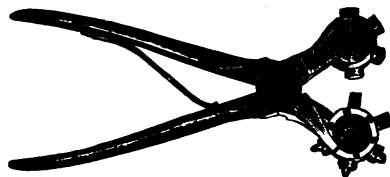


FIG. 5266.

**REVOLVING PUNCH AND EYELET FASTENER.**

The Eyelet reinforces and strengthens the hole. This tool will pay for itself in a short time. Three sizes Punches and Eyelets. Price, \$3.50, with one Box Assorted Eyelets (300); Extra Eyelets, 40 cts. per Box, post-paid.



THE  
CONTRACTOR, CRAFTSMAN  
AND  
APPRENTICE.

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ELEMENTS OF DESCRIPTIVE GEOMETRY  
AS  
APPLIED TO THE TRADES

GIVING THE METHODS OF FINDING THE

Different Lengths and Bevels in Carpenter Work,  
SHEET, METAL AND IRON WORK,

CONTAINING

Instructions for Making Cross and Detail Sections of Work, and the Practical  
Application of the Standard Steel Square,

WITH

BUILDERS' ESTIMATES, BLANK FORMS OF SPECIFICATIONS,  
BONDS, CONTRACTS, ETC.

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BY  
W D BAKER.

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NOTE BY THE PUBLISHERS.—Shortly after this catalogue was begun we were approached by the author of "THE CONTRACTOR, CRAFTSMAN AND APPRENTICE," in reference to advertising our Tools and Machinery. After going over the work we were quite impressed with the fact that it was the most complete and comprehensive little text book that we had seen, and we succeeded in securing, at considerable expense, the right to incorporate it in our catalogue.

This work contains as much useful and instructive matter as is found in many of the high-priced, technical books. One of our customers says, "It is the most useful book in my library, and contains many important drawings and suggestions that are not commonly found in any but the most expensive books."

This work, if drawn out and printed as technical books often are, would consume eighty to one hundred pages, and bound in cloth, would sell at from \$1.00 to \$1.50.

It has been condensed only in space, all of the original work being retained.

CHAS. A. STRELINGER & CO.

## INTRODUCTION.

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The object of this work is to place before the practical mechanic simple illustrations of the first principles in Geometry and the manner of making practical use of them, and to give him a proper understanding of the "square," and to furnish an easy system of lines for the framing of different classes of work and for cutting all manner of joints. In doing this the author has taken the first principle in Geometry (the Point) and applied it to the center of the circle as a place of beginning, and relies upon it for proof of every demonstration made, as from it radiate all lines of whatsoever kind made use of by the practical mechanic. The Blade of the Oblong Square is made to represent the Horizon of the Circle and the Tongue a Tangent to the Circle.

It will be seen by observing the first illustrations in this work, that, while the apprentice or common mechanic, may be able to make use of the "square," and perform such work as may be designed for him, under instructions, he cannot hope to fit himself as a *Master Mechanic* without a thorough knowledge of the use of the compass and principles contained in the circle.

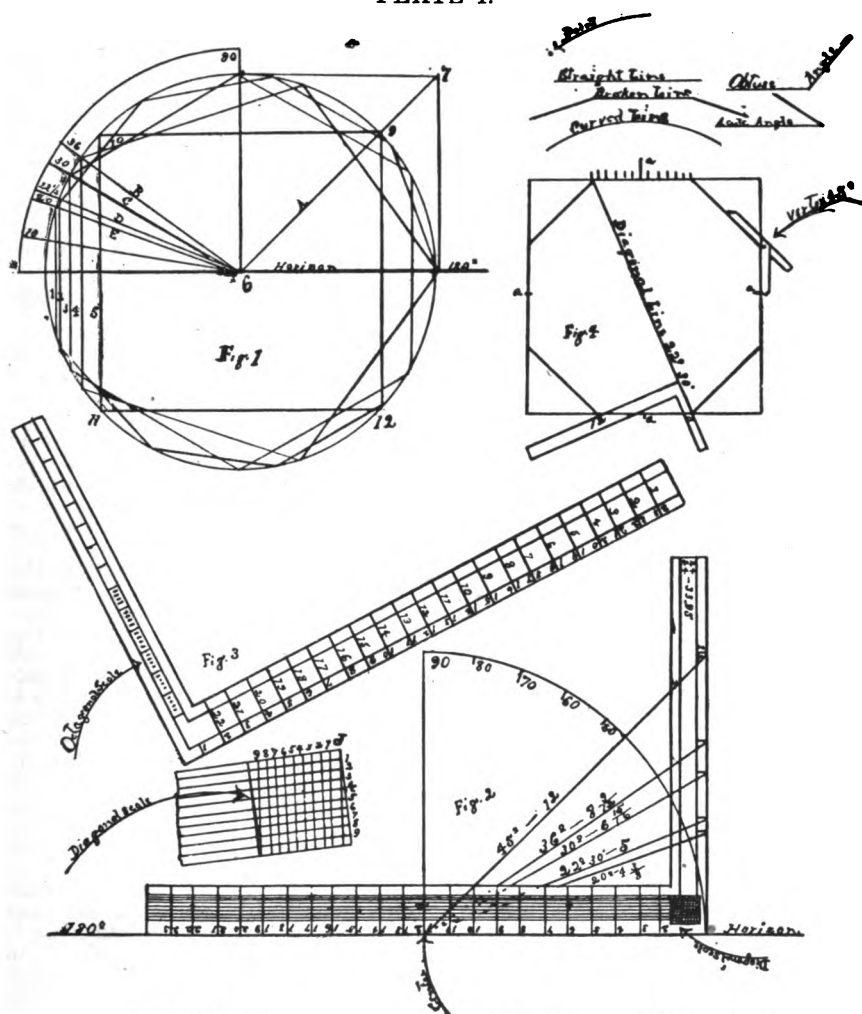
It is a further object of this work to enable the mechanic to understand and properly execute the plans of the architect or designer, and in the absence of

such person, to be able to proportion and set forth his own work.

It is a known fact that the mechanic often blames the architect with incompleteness in details and error in minor items of the work, and it is often the case. But we, as practical workmen, should take into consideration the difference between the principles involved. The architect must first construct his work in his mind; he must not only be able to see the beginning or ground plan, but everything that is to be placed thereon, as well as the general outline and design. He must have a thorough knowledge of the specific gravity and tensile strength of every component part of the structure; in doing so he may sometimes lose sight of minor details.

The mechanic, before commencing to execute the work, has the general plans and specifications, conveying the ideas of the architect, before him, and in case of discrepancies in minor details should be able to supply them in proper manner to carry out the ideas of the architect. There are many times that the "journeyman" has found himself suddenly thrown out of employment, or has failed to receive an advance in wages from the fact that he was uninformed as to some of the important principles of his trade.

## PLATE I.



## PLATE I.

At the top of this plate will be found the first principles in Geometry as made use of in this work.

1st. A point, or place of beginning, that which has place or position, but not magnitude.

2d. A line, that which has length without breadth or thickness.

3d. A broken line, made up of

straight lines not lying in the same direction.

4th. A curve line which changes its direction at every point.

When the word line is used it is supposed to designate a straight line, and the word curve, a curved line.

An angle is the portion of a plane included between two straight lines which meet at a common point.

The two straight lines are called the sides of the angle, and the common point of intersection the vertex.

An acute angle is less than a right angle.

An obtuse angle is greater than a right angle.

A polygon, or rectilinear figure, is a portion of a plane terminating on all sides by straight lines. 1, 2, 3, 4 and 5 in Fig. 1.

The polygon of three sides is called a triangle; that of four sides, a quadrilateral; that of five sides, a pentagon; that of six, a hexagon; that of seven, a heptagon; that of eight, an octagon; that of nine, a nonagon; that of ten, a decagon; that of twelve, a dodecagon.

On Fig. 1 is shown the equilateral parallelogram or perfect square, 5, whose diagonal line, A, rises at an angle of 45 degrees, the vertex, 6, being an angle of 90 degrees. The angle of the vertex is always double the number of degrees which the diagonal line rises from the horizon, or given line. The parallelogram 5, Fig. 1, is an equilateral figure, or perfect square, described within a circle; the four vertices, 9, 10, 11, 12, being the four cardinal or perfect points in the circle.

At 1 on the same figure will be seen the nonagon, or polygon of nine sides, whose diagonal line rises at an angle of 20 degrees from the horizon and whose vertex is an angle of 40 degrees.

At 2 is the octagon of eight sides, whose diagonal line rises at an angle of 22 degrees 30 minutes, and whose vertex is an angle of 45 degrees.

At 3 the hexagon of six sides, whose diagonal line rises at an angle of 30 degrees and whose vertex is an angle of 60 degrees.

At 4 the pentagon, or figure of five sides, whose diagonal line rises from the horizon at an angle of 30 degrees and whose vertex is an angle of 72 degrees.

To find the number of degrees the diagonal rises from the horizon, divide the number of sides in the polygon into 360 degrees and divide by 2.

On Fig. 1 we find all the lines radiating from the center, 6, represented on the circumference of the circle by degrees, minutes and seconds, meaning the number of degrees, minutes, etc., which the line rises from the horizon.

In explaining the steel square and its uses, and in all other illustrations, the terms "rise" and "run" will be used in the place of degrees, minutes, etc., meaning the number of inches a line rises in every foot on the horizon, that being a common term among mechanics.

The Standard Steel Square, Figs. 2 and 3, has a blade 24 inches long and 2 inches wide, and a tongue 16 or 18 inches long and  $1\frac{1}{2}$  inches wide; the blade is exactly at right angles with the tongue, forming the base and perpendicular of a right angled triangle. The angle at the vertex being an angle of 90 degrees and one of the four cardinal points shown on the circle. The square shown at Figs. 2 and 3 is the Standard Steel Square, containing the diagonal scale of hundredths, brace measure and lumber measure.

On the lumber scale will be found nine parallel lines running parallel with the sides of the blade, divided at intervals of one inch into sections or spaces by cross lines. On each side of the cross lines, and often spaced over the lines, are figures denoting the lengths and widths of lumber. Suppose we had a board 12 feet long and 6 inches wide; looking on the outer edge of the blade find 12. Between the fifth and sixth lines will be found 12 again; this is the length of the board. Now follow the space toward the tongue till you come to the cross line under 6 (on the outer edge of the blade), six being the width of the board; in this space will be found the figure 6 again which is the answer in board measure, viz: 6 feet. A careful examination of the scale will soon make anyone familiar with it.

On the same side of the square near the vertex will be found the diagonal scale of hundredths, or centesimal scale, as by it a unit may be divided into one hundred equal parts. The scale shown on the Standard Square is 1 inch square; then if it be required to take off .43 of an inch, set one foot of the dividers in the third parallel line from J, extend the other foot to the fourth diagonal on the same parallel; always start with the parallel line whose number corresponds with the unit figure of the distance required.

In the center of the tongue on the same side will be found the brace measure; between two parallel lines a half

inch apart, near the extreme end, will be found 24-24 33-94. The 24-24 indicates the rise and run of the brace, or the base and perpendicular of a right angle triangle; the 33.94 represents the hypotenuse or length of the brace which would be 33.94-100 inches, but in heavy frame work would practically be 34 inches, allowing the 6-100 for crowding of the wood by draw-bore and key.

On the opposite side of the tongue from the brace measure will be found the octagonal scale, Fig. 3, situated between two parallel lines, divided into intervals and numbered thus: 10, 20, 30, 40, 50, 60. Now let the square, Fig. 4, represent the end of a stick of timber 6 inches square, bisect the lines at *aaaa*; then with the compass take off as many spaces from the scale as the stick is inches square and with *aaaa* as centers point off the distances each way and connect the lines, which will be the octagon required.

On Fig. 2 will be seen the method of getting the angles for cutting the joints for any polygon whose sides are of equal length or for cutting the rise and run cuts for any roof. First, let the outer edge of the blade of the square represent the horizon of a circle at 180 degrees, and 12 the center of the circle and base of all operations on the square, for it always represents the run, the rise being shown on the tongue. On the Quadrant of the circle we find a line running from the horizon at an angle of 45 degrees. Starting at the center, 12, and at the intersection on the tongue, we find 12 again; then with the square being laid upon the edge of the board at 12 and 12 the angle upon either side would be an angle of 45 degrees, and as 45 degrees is one-half of the whole quadrant of 90 degrees, we say "half pitch," hence the pitch of a roof or line is according to the number of degrees it rises from the horizon in the whole quadrant. Many carpenters in cutting a quarter pitch roof use the figures 6 and 12 on the principle that if 12 and 12 will cut the rise on a half pitch, 6, being the half of that, will cut the quarter pitch, but that is not correct as will be seen. The reasons for taking the figures 6 and 12 for quarter pitch, 8 and 12 for third pitch, etc., is because they represent one-fourth or one-third of the span of

the building, and has become an established rule, yet, the same rule will not apply to any polygon, except the perfect square. 22 degrees 30 minutes being the half of 45 degrees, or one-fourth of 90 degrees, would be the line upon which the roof rises and the diagonal line intersects the tongue of the square at 5, that being the cut for a quarter pitch roof; also the diagonal cut of the octagon as shown in Fig. 4.

In the practical application of the square, it is necessary to study thoroughly the relation which one object or piece of work bears to the other. In determining what a square is, we first have to resort to the circle, naturally beginning with its center.

## PLATE II.

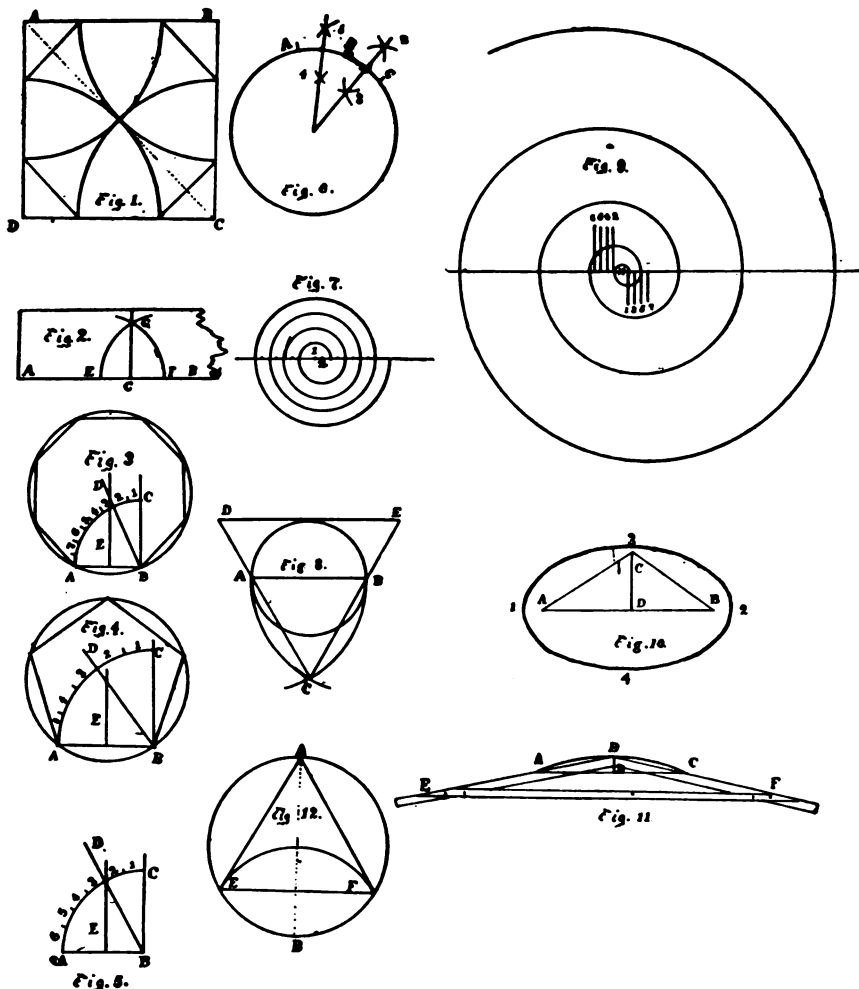
On this plate is given a number of geometrical figures and the method of constructing them.

Fig. 1 shows an easy method of describing an octagon from a given square. From the corners A, B, C, D, as centers, and one-half the diagonal line as a radius, describe the arcs shown, connect the intersecting points and the figure is complete.

Fig. 2 shows the method of erecting a perpendicular from a given line with the compass. Let A, B represent the edge of a board and C the point from which to square it; with one point of the dividers at C step off any equal distance each way on the edge of the board, E, F; then with E and F as centers describe the arcs G, then the points G and C will be the points from which to draw the perpendicular line.

Figs. 3, 4 and 5 show the method of describing a polygon of any number of equal sides when only one side of the polygon is given. Fig. 5 shows the first operation. A, B is the given side of a hexagon; at B erect the perpendicular B, C indefinitely; then with A, B as a radius describe the quadrant of a circle A, C, divide the quadrant into as many parts as there are sides in the polygon; through the second division from C, draw the diagonal line B, D, bisect A, B and erect the perpendicular E, and the point of intersection with the diagonal line will be the center from which to describe the circle intersecting all

## PLATE II.



the vertices of the polygon; then with A, B as the given length step off with the dividers the remainder of the sides, as on Figs. 3 and 4; the method is the same in all regular polygons. A, B represents the horizon and the second space from C the number of degrees or distance the diagonal line rises.

Fig. 6 shows the method of describing a circle through any three given points

out of a right line, or to find the center of an arc. Let A, B, C be the given points; with any radius and A, B, C as centers, describe the arcs 1, 2, 3 and 4. Draw the lines through their points of intersection; then at the intersection of the lines will be found the center from which to describe the circle touching the points A, B, C.

Fig. 7 shows the method of describing

any number of spiral lines around a given center whose diameters are all alike on the horizon. Let 1 be the center or given point; divide the horizon into twice the number of parts there are to be revolutions of the line; then with 1 as a center describe all the arcs above the horizon; and with 2 as a center, describe all the arcs below the horizon and the spiral is complete.

Fig. 8 shows the method of obtaining the circumference of a circle geometrically; with the diameter A, B as a radius, describe the arcs intersecting at C. Draw the tangent D, E parallel to A, B, indefinitely, draw the lines C, A, C, B to intersect the tangent at D, E; then the distance from D to E will be equal to one-half the circumference of the circle.

Fig. 9 shows the method of describing any number of spiral lines around a given center where lines diverge one or more diameters on the horizon for every revolution of the line; divide the horizon into twice the number of parts there are to be revolutions of the line; with one point of the dividers at X describe the first diameter, then with 2, 4, 6, 8 as centers, describe successively the arcs above the horizon and in the same manner describe the arcs below the horizon from 1, 3, 5, 7 on the opposite side of the center, changing the radius and center for each semi-circle.

Fig. 10 shows the method of describing an ellipse by means of a cord; make A, C, B, C each equal to one-half the longest diameter 1, 2. Make C, D equal one-half the shortest diameter; drive a nail or pin at A, B, C, around which points tie the cord; then remove the pin at C, and, with the pencil inside the cord, describe the figure as shown, taking care to keep the tension of the cord the same at all points.

Fig. 11 shows the method of describing an arc of large dimension by means of a triangle. Let A, B, C be the points through which to describe the arc; the line A, C will then be the cord of the arc. Out of suitable material construct a triangle, making E, F parallel to A, C, and twice the length of the arc at B, D; at each end of the cord A, C place a nail or pin, with the pencil at the vertex B, move the triangle from A to C, keeping it tight against the pins, and the arc is described.

Fig. 12 shows the method of describing an equilateral triangle from a given circle. Take any diameter, A, B, with half the diameter as a radius and B as a center describe arc E, F, connect E, F, F, A and A, E, and A, E, F will be the points of the triangle.

### PLATE III.

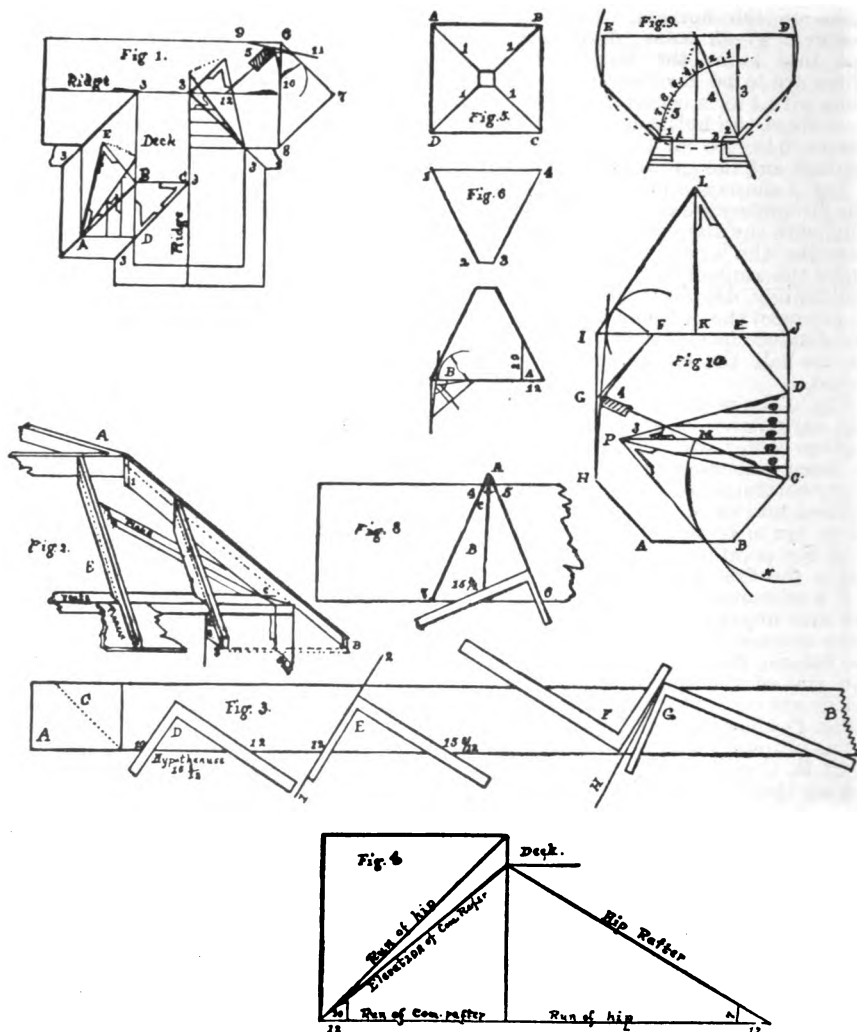
Fig. 1 shows the plan of a nave and transept roof with hip, valleys and gables.

Let A, B show the run of the hip rafter, and B, D the run of the common rafter; B, E or B, C will be the rise of either of them, as both are the same. Now join A, E, which will be the length of the hip, and D, C the length of the common rafter; the bevel shown at A will be for the foot of the hip and the one at E for top or down bevel. The bevel at C will be the down bevel for the common rafter and the one at D for the foot or horizontal bevel; now drop the length of the hip, A, E, to intersect the line of the deck, on the line of the plate, A, D, space off the jack-rafters, extend the lines to intersect the line of the hip, which will be the length of the jack-rafters. The bevel shown at the point of intersection will be the face or angle bevel for the top of the jacks; the down and foot bevels being the same as the common rafter. On the valley, 3, 3, is shown the same method of getting the lengths and bevels of the valleys, except the bevels on the jack-rafters reverse.

At 5 on the plan is shown the method of getting the angle to back the hip rafter so that when in position it will be upon the same plane as the common rafter. Space off equal distances from the corner 6—9, 6—10; with 10 as a center describe the arc shown, making it tangential to the common rafter, 6, 7, make 9, 11 tangential to the arc; draw the diagonal line, 6, 12, connect 10 with the point of intersection of 9, 11 and 6, 12. The angle shown at 5 will be the backing of the hip.

On Fig. 2 is shown a sectional view of the hip and the jack-rafter when in position and the manner of laying them off. Many carpenters, after getting the lengths as shown on Fig. 1, proceed to lay off their work, making their

## PLATE III.



measurements all upon the outside of the piece, and when they come to put up the work find that the joints are not accurate, and the roof not square.

Let A represent the corner of the deck and A, B the hip in position; if the roof have a rake cornice, and the rafter projects beyond the plate to receive the planer as shown at B, then

the line upon which to make the measurement for the length of the rafter would be the dotted line, 1 C. Then, first lay off and cut the angle at the corner of the deck, A, before backing the rafter; square out from the vertex of the deck to the corner of the rafter, drop the line 1, parallel to the down bevel, strike the dotted line 1 C, and



the distance from 1 to C will be the length of the rafter, on its center lines, from heel to point.

After the rafter is framed, gauge and dress off the backing as shown. The jack-rafter, E, is framed on same principle and needs no further explanation.

The projection of the rafter in Fig. 2 shows that it is cut perpendicular to the plate which would make the fascia and crown moulding stand in the same relation to the roof. Therefore, the cut through the fascia and crown would, at the intersection of the roof, be a square miter; but the joint for the intersection of the level moulding and the "raking" crown moulding would be the difference between a square miter and the hypotenuse of the rise and run of the common rafter and 12 on the square, as shown at H, Fig. 3. But if the moulding be placed in that position it becomes necessary to work out a special moulding for the gables, in order to have it member with the level mould, which will be illustrated on chart 4.

On Fig. 2 is shown the method of getting the cuts for the intersecting cornice at the hips and valleys. Let 2, 3, Fig. 2, represent the planceer standing on the angle it would be, if nailed to the underside of the common rafter, 2, 3 being the width of the board; 3, 4 is the length of the miter at the square of the cornice and forms the base of a right angled triangle, 4, 2 being the perpendicular, as shown at C, Fig. 3. Suppose the common rafter has a rise of 10 inches to the foot and the hip a rise of 7 inches to the foot as shown on Fig. 4. Now let A, B, Fig. 3, be the board on which the joint at A, Fig. 1, is to be cut. The rise and run of the common rafter is 10 and 12, as shown at D, on the board. With the hypotenuse of 10 and 12, which is  $15\frac{1}{2}$  inches on the blade of the square and 12 on the tongue, cut on the 12 side as shown at E, 1, 2, which will be both the face and down bevel for the joint and is a full solution of the hopper joints, illustrated on Figs. 6, 7 and 8. Provided the roof is a right angled roof, or half pitch, or if a hopper, the sides must stand at an angle of 45 degrees. In all other roofs or hoppers, the long bevel or hopper joint is obtained in the same manner, viz: with the hypotenuse of the rise and run of the common side on the

blade of the square and 12 on the tongue and cut on the 12 side; but the down bevel of the hip, which would be the rise of the hip or angle piece, and 12 will be the bevel for the fascia and crown mould, and for the edge of the board in the hopper. If the two intersecting roofs do not meet upon the same angle, bisect the difference between the angles of both roofs, as shown at Fig. 9, on the board and the line at H will be the proper joint to form a perfect member of all parts of the cornice, but in nailing up it will be necessary to spring the ends of one side down and the other up to bring them together, which can be done without trouble where the angles are not too close to the ends of the pieces.

On Figs. 5, 6, 7 and 8 is shown the same principle applied to a grain mill hopper. Let Fig. 5 show the plan of a grain mill hopper, A, B, C, D, six feet square on top with an eight inch opening at the bottom. On Fig. 6 is shown an elevation of the sides of the hopper, 1, 2, 3. On Fig. 7 is shown the elevation of the hopper inverted, showing a hip roof with an eight inch deck at the top and the common rafter rising 28 inches to the foot. Now let Fig. 8 represent the piece from which a side of the hopper is to be cut; on the edge of the piece lay off the width of the top of the hopper, six feet, from the center; between these two points, draw the perpendicular or square line, B. Now as the hypotenuse of 29 and 12 cannot be obtained on the square readily, divide the two terms which would be  $14\frac{1}{2}$  and 6, the hypotenuse of  $14\frac{1}{2}$  and 6 is  $15\frac{1}{2}$ . There with  $15\frac{1}{2}$  and 6 on, the edge of the board at 6 will be found the angle of the side of the hopper; reverse the square to 7 and lay off the other side, then from the square line, B, square off the point at 8 inches, C, and you have one side of the hopper without the necessity of any drawing of lines after the size of the hopper and the rise of its common sides is known. The angle piece for the corner is found in the same manner as the backing of the hip rafter, as shown at B, Fig. 7.

On Fig. 9 is shown the method of laying off an octagon bay window on the plan so as to get the dimensions of material, and so that all casings will be the proper width, and all stand in the

same relation to the diagonal line of the window. On the line, 1, 2, lay off the width of the sash, A, B; then lay off the width of the inside casing, 1, 2 (always making calculation for the width of the back side of the inside casing to be the same width as the remaining casings in the room), this then will be the given side of the octagon. Now proceed as in Fig. 3, plate 2, to find the remaining sides of the window, complete the detail of the given side and you have the dimensions of the outside and inside casings, jams and sills and the diagonal lines upon which they are to be worked.

On Fig. 10 is shown the method of getting the angles and framing an octagonal roof. Let A, B, C, D, E, F, G, H be the plan of the roof; extend H, G to I and C, D to J, join I, J, make K, L equal to the rise of the roof, join IL, JL, which will be an elevation of the common sides or rafters. On the plan make P, M, O equal to J, L on the elevation, then P, D, P, C will be the length of the angle rafters and 0, 0, 0, 0 will be the length of the jack-rafters. The face bevel for the jacks is shown at 3 on the plan and the down level at L on the elevation. To find the bevel for the angle rafter, with one point of the compass at C, and M as a radius, describe the arc, M, N indefinitely, make P tangential to the arc and the angle shown at P will be the down bevel for the angle rafter. The backing for the angle rafter is found in the same manner as shown on Fig. 1. The backing is always found on the diagonal lines of plan for any roof. (See Fig. 10). The same method is used for a roof of any number of sides.

### PLATE IV.

On Fig. 1 is shown the method of describing and finding the length of the veneer for a splayed gothic head jamb, splayed alike all around. Let A, B on the sill be the width on the sill the jamb is to cover, and C, D the splay or run of the jamb when in position, extend the splay of the jamb, C, D, to insert the perpendicular line, F, G, then G C, G D will be the radius to describe the shape and width of the

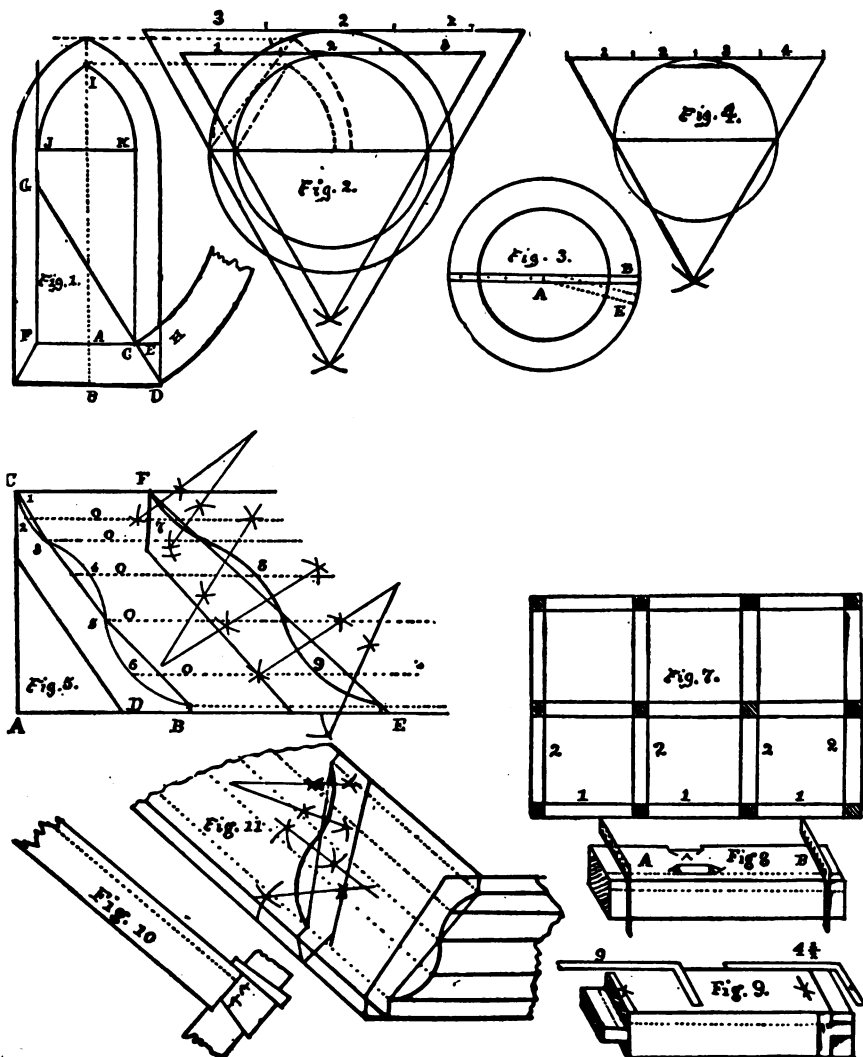
jamb, H; the intersection of the two joints at I forms a hopper joint and the triangle, C, D, E, shows the rise, run and hypotenuse of the same; with the rise and run, always taking 12 as the run on the square, find the hypotenuse, and with the hypotenuse and 12, cut the joint at I from a square line, after the length of the piece is found on the outer edge of the circle.

To find the length of the two arcs: Let J, K be the radius from which they are described, which is the true gothic and represents the one-sixth part of a circle whose chords are equal to a hexagon; then with the radius, J, K, complete the circle as shown in Fig. 2. Now proceed as shown on Fig. 8, plate 2, to find the circumference of the circles which represent the outside and inside edges of the jamb, divide the two tangents at the top into three equal parts, any one of which will be one-sixth of the whole circle, or the length of the jamb on its short and long sides. The same rule applies in all parts of a circle, as shown on Fig. 4. Divide the tangent into half the number of parts the arc is of the whole circle, and any one of them will be the length required. To find the length mathematically, as 7 is to 22, so is the given diameter to the circumference.

On Fig. 3 is shown the method of getting the distance to make the kerfs in the piece so that when the piece is sprung into position the kerfs will all be closed. Let the two circles represent the splay of the jamb, the radius of the circle being the same as J, K in Fig. 1, take a narrow strip of stuff the thickness of the veneer, make the saw kerf at the center, A, fasten one side to the floor, move the other end from B towards E, as shown by dotted lines, until the kerf is closed, then the distance the stick has moved on the circle will be the distance between the kerfs on the short and long sides respectively, with these distances on the dividers space off the kerfs on the short and long sides of the piece, H, Fig. 1.

On Fig. 5 is shown the method of framing an ogee, concave or convex roof so when the rafters are in position the angle or hip rafter will stand upon the same plane as the common rafters at all points. Let A, B be the run of

## PLATE IV.



the common rafter and A, C the rise, then B, C will be an elevation of the common rafter. First determine the shape of the common rafter and draw

it to a scale on the elevation shown, make D, E the run of the hip rafter, D, F being the rise, then the straight line at E, F will be an elevation of the

hip. From the highest and lowest points in the common rafter, 1, 2, 3, 4, 5, 6, draw the parallel lines 0, 0, 0, 0, 0, 0, through the straight line, E, F, then with the depth of the circles, 2, 4, 6, on the common rafters set off the same distances at 7, 8, 9 on the parallel lines through the hip, which will give all the points through which the circles are to pass in the hip. Now proceed in the same manner as shown on Fig. 6, plate 2, to find the centers of the circles. After completing the draft, carefully measure the distances on the rafters and lay off the top and bottom cuts, then if the circles are too large to get the centers and strike with a trammel, construct the triangle as shown on plate 2, if great accuracy is required, but in ordinary work the circles can be formed by using a thin piece of stuff and springing it to the points.

On Fig. 11 is shown the same method applied to a raking crown mould to miter into a level mould, which stands on a plumb line with the wall of the house. The same principle is applied to finding all internal and external angle brackets. Always place the common bracket and the angle piece in the same relation to each other which they would be if in position in the house, and on the parallel will be found all the circles.

On Fig. 7 is shown the plan of a regular frame building divided into four bents. The first essential point in frame work is to know that all timbers are well out of wind. Let A, B, Fig. 8, represent one section of the side sills, 111 the cross sills 2222 being framed into it, as are also the posts for the upright. Suppose this stick to be 25 feet long, and that you are to allow 1 foot for lap splice in the center of the building, then the distance from the point where the splice begins and the end of the splice will be 24 feet. At a point about two inches back from the 24 feet, and also the opposite end of the stick on the side you intend to have up when framed, place a steel square upon each end with the tongue hanging down and clear of the stick, then sight across the top of the squares to find the amount of wind in the sticks; then with a jack-plane remove the opposing points at each end until both squares rest alike upon the face of the stick

and are out of wind. This being the upper or work side of the stick, mark a cross on the plumb spot, as shown at A, Fig. 9, with the blade of the square held firmly on the line, draw the tongue up against the outside of the stick, which will show the amount of wood to be removed to make the corner square. After the stick is out of the wind and square, at a point two inches from the corner on the plumb spot, strike the chalk lines as shown by dotted lines, from which lines all the work should be laid off, never squaring from the outside of the stick. Always keep the plumb spots inside of the points where the wood is to be cut away, so in case the lines be erased before the stick is complete they can easily be replaced.

Fig. 9 shows one of the cross sills laid off and partly framed. Suppose the building to be 32 feet wide and Fig. 9 one of the cross sills at 2222, first determine the size which all the timbers will work. Say in this case the side sills are to be sized to 9 inches, the building being 32 feet wide the length of the cross sills would be 16 feet, less the thickness of the outside sill and one-half the thickness of the center sill, which would be 9 inches and 4½ inches respectively; do not compute the length of the cross sill in feet and inches; the entire length is 16 feet, including the sills, with the square on the sticks, using the reverse scale of inches for the outside sill as shown at A, measure off 16 feet, making your mark at 4½ inches, as shown at B, for the half of the center sill, which will be the points to cut the shoulders of the tennon. Make all sizing from the chalk lines on the face of the stick.

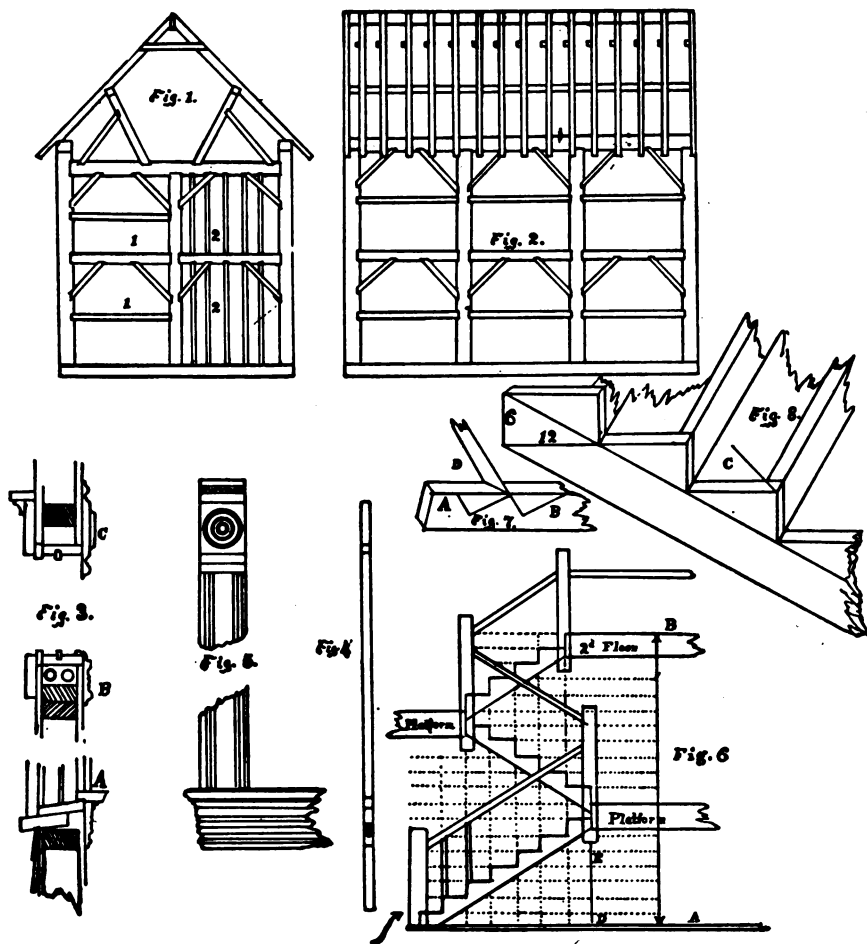
Fig. 10 shows the method of framing a cross girder with tusk tennon, key and draw bore, and needs no explanation.

## PLATE V.

On plate 5 is taken up the method of cross sectioning and detailing work to a scale for working purposes.

Fig. 1 shows a cross section of a double-braced regular frame building. Fig. 2, a transverse section of the same, and is merely as an illustration of prin-

## PLATE V.



ciples. The roof shown here could be adapted to a large hay or feed barn where it is necessary to operate a track hay fork, which is fastened to the collar beams, thus leaving plenty of clear space to operate the fork.

It will be seen by the boxings or sizings how all the timbers are faced. The mechanic once getting a correct idea of the face or work sides of all his timbers

will have no difficulty in keeping work in harmony, and there is no better way than drawing it as it will appear in position, besides being a great help in making an accurate bill of material. Where great weight is to be placed on the bearings, it is best to box all supports upon both sides, but ordinarily the face sides are left flush. At 11 is shown the method of framing in the

nail ties for perpendicular siding or boxing; at 22 the studding for horizontal or lap siding.

Fig. 3 shows the method of detailing a door or window frame for any kind of building. First set off the thickness of the wall, if of brick or stone, or the width of the studding if of wood, and draw the two perpendicular lines representing it; then if it is to be a frame building, add the thickness of the sheathing to the outside and the thickness of the lath and plaster to the inside. Then proceed, as in the drawing, to lay off the rough trimmer sill, sub-sill, stool, etc., as shown at A, extend the lines and lay off the cross section at B and the section through the head at C, laying off both inside and outside finish and the working detail is complete. For an elevation of the finish, transfer the lines as shown on Fig. 5 and describe the face of the finish as shown.

Fig. 4 represents a laying-off rod which the mechanic will find convenient for laying off the frames, and afterwards space the frame work to receive them. First, lay off on the rod the rough header; then the head jamb; then the length of the frame on the inside; then the sub-sill and the trimmer, leaving out the sill. Frame the sub-sills into the jambs and cut the main sill between; now add the distance to the bottom of the pole which your frames are to stand from the floor or joist, the location of the headers and trimmers are easily found. When spacing for your frames on the opposite side of the pole, lay off the distance the studding are to stand apart, allowing for the pockets for the weights, and no error can occur in spacing the frames.

Fig. 6 shows the method of making a profile of a platform stairs, running from first to second floor. First find the height of the story from the top of one floor to the top of the next, A, B; space off with the dividers on the line, A, B, as many spaces as there are to be risers in the whole stair, making all spaces equal, never making variations in the width of the risers from one flight to the other if possible to avoid it. Now draw the lines parallel to the floor line and the width of the risers apart; take off the width of the first platform and drop the perpendicular

line, E, D, from the face of the platform, space off the width of the steps from D to the center of the main newel and erect the perpendicular lines, as shown, to the second floor. On the intersection of the perpendicular and horizontal lines block out the forms of the rough horses; before blocking out the horses locate the platforms on the plan, then, as in Fig. 6, the first and second platforms and the second floor will each form a step, so in the bill of material we would have three more risers than there are steps. Scribe off the thickness of the first tread from the bottom of the rough horse, and set all others in the same relation to the platforms, locate all platforms so that the distance between them will be the exact width of a certain number of steps. Great care should be taken in planning a hallway for a stair so that all distances may come out equal. Now lay off the rails parallel to the horses, and at the height desired, then the perpendicular lines will be the length of the short baluster and the place of its intersection with the rail, the place to bore for it. If there be an easing sprung to the newel the same lines will be the point from which to start the spring of the easing, it being the center of the easing which would be sprung right and left from the tangents formed by the level rail and angle rail, the radius of the easing being one-half the height of the rise. Locate all newels on their centers, all projecting the same distance below the platforms and a sufficient distance to receive whatever work is to be applied to the skirting or face string of the stairs. Make the frame for all platforms exactly the same depth as the second floor joist.

By making the drawings carefully and to a scale, no trouble will be found in getting out a bill of material and locating the ornamental work on the newels, whether it be machine or hand work.

Fig. 7 shows the string piece, or face skirting, with the riser, D, mitered into it. If the miter be cut on the edge of the string before the threads and risers are cut out the joints would not be an exact angle of 45 degrees. In the first place the relation of the riser is perpendicular to the horizon. Suppose the string piece to stand at an angle of 30

degrees when in position, and having a rise and run of 6 and 12 inches as shown on the pitch board in Fig. 8. The true diagonal line of the joint in the risers is an angle of 45 degrees, or 12 and 12, hence it becomes necessary to divide equally the difference between the two angles, take the hypotenuse of 12 and 12 on the blade of the square and 12, then the hypotenuse of 6 and 12 and 12, divide the difference between the two angles, as shown on Plate 3. Then with that angle cut on the blade side of the square for the joint, for the riser does not stand in the same relation to the stairs as the string piece as explained above, hence the cut must be on the acute side of the angle. If you were to saw out the threads and risers first before laying off the miters, both pieces would cut on an angle of 45 degrees from the horizon; but that would make it necessary to saw the same joint twice. The above rule applies the same in cutting the joint in a crown moulding at the intersection of two roofs meeting on the same plane where the crown moulding stands at right angles with the roof in place of being plumb with the wall of the house, as shown on Plates 3 and 4.

## PLATE VI.

On Figs. 1 and 2 is shown the method of making elevation drawings in cases where the services of an architect has not been secured, which is often the case in the smaller towns and the country.

Let Fig. 1 be the outline of the ground plan of that portion of the building which it is desired to show. A, an oriel window on the second floor, hexagonal in shape; B, a bay window on the first floor, octagonal in shape. Determine the height of the house and draw the vertical section, Fig. 1, showing the foundation, sills, pitch of the roof, cornice, etc., then from the points on the floor plan erect the perpendicular line for all the openings, corners and angles, and from the vertical section draw the main parallel lines for the height which will give you the profile of the house; then fill in the finish and work as desired. If you are not able to make a fine drawing you will get the ideas of

proportion, and be able to make a fair illustration to the employer of what he may expect. Show the work as near as possible as it will appear when built; then for working purposes make the larger details for the work that you cannot show to good advantage on the elevation, as shown on Fig. 3, which is a detail of the enrichment of the porch frieze on Fig. 1. If it should be necessary to show more than one side of the building, turn the floor plan to the point which is to be shown, fasten to the board and proceed as before.

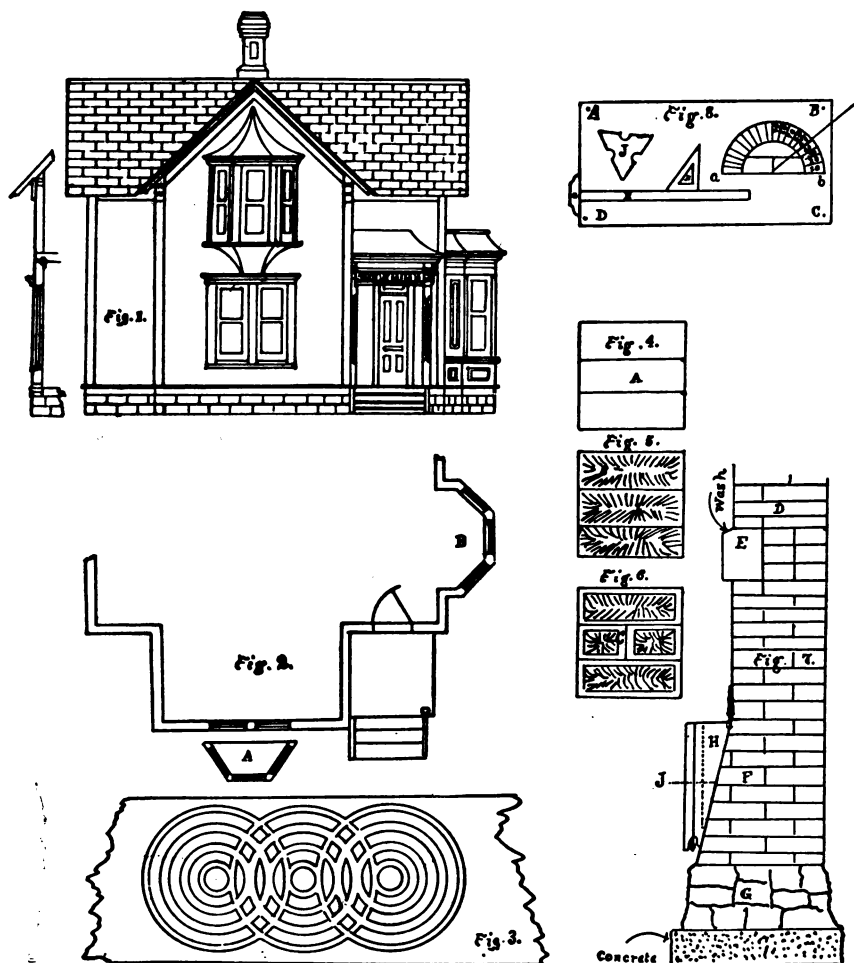
Figs. 4, 5, 6 and 7 are stone and brick details. A would be point face or sawed stone; B, pitch face range; C, pitch faced tool margin; D, brick wall; E, stone water table cut with a wash; F, battered brick wall; G, a plain rubble wall of stone.

At H is shown the method of constructing a mason's plumb for laying a battered wall. Suppose the wall to batter 1.44 inches to the foot. From the width of the bottom of the piece make the gauge mark shown by dotted line through H, one foot from the bottom make the square line J, then with the dividers take from the diagonal scale on the square 1.44 inches, set it out on the line, J, from the intersection of the dotted lines towards the line of the wall, which will be the point through which to draw the line from the bottom of the piece.

On Fig. 8 is shown a draughting board or table, A, B, C, D; at E, a T square; at F, a set square or triangle; at J, a cross section or end view of a triangular scale rule; at H, a semi-circular protractor, which, with the addition of two or three sizes of dividers, with pen and pencil points, and a parallel rule is all the mechanic really requires to make all necessary drawings for his own use. Handle the T square entirely with the left hand, and when using the set square to erect perpendiculars keep the thumb of the left hand on the blade of the T square with sufficient pressure to the right to keep it tight against the board on the left, then with the fingers of the left hand move the set square as desired, keeping it tight against the T blade.

By using the triangular scale rule, which is laid off on all sides in the different scales, the necessity of transferring the scales from the rule to the

## PLATE VI.



paper with the dividers, as would be the case with a flat rule, is avoided as the measure can be taken direct upon the paper.

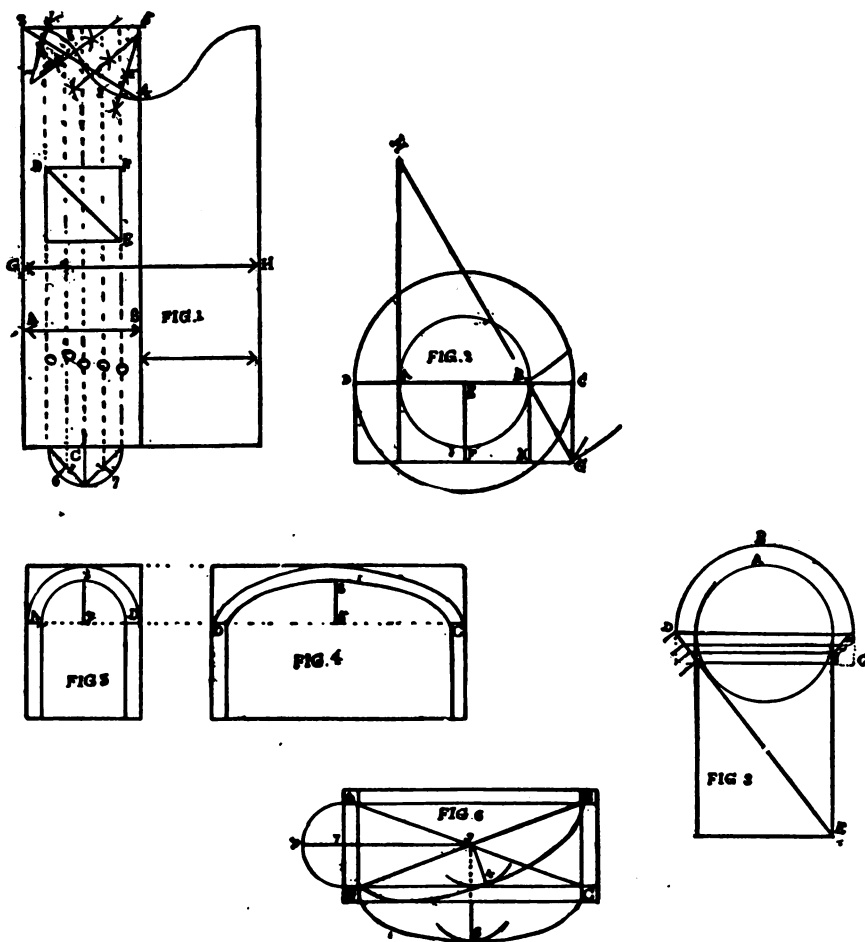
The semi-circular protractor is for erecting a diagonal line of any number of degrees from the horizon or given line. Suppose an angle of 40 degrees is required. From the point on the

line, A, B, lay the protractor on the line as shown; mark the point at 40, remove the protractor and connect the two points which will be the line required.

Make all drawings to as large a scale as convenient, thereby securing greater accuracy.



## PLATE VII.



## PLATE VII.

Fig. 1 is the method of mitering a tin gutter, or conductor, before the tin is sprung into position. Let A, B represent the width of the sheet of metal the gutter is to be made from, and, C, the gutter after it is formed. Let the diagonal line of the square, D, E, represent the miter or angle the gutter is to show after it is bent into position; draw the parallel lines, O, O, O, O, O, to in-

tersect the centers and sides of the end section, as shown at C, 1, 1. Now lay off the angle lines, 3, 4, making the distance, 4, 5, equal to F, E on the square. On the parallel dotted lines, 1 8, 1 9, set off the depth of the curves, 1 6, 1 7, as shown at 8 9, which will be the points through which to describe the curves to form the miter of the gutter so that it will make a joint when sprung into position. To miter the round conductor or stove pipe, repeat

the operation on a sheet of metal twice the width, G, H; to obtain the width of the sheet of metal for a gutter or conductor of a specific diameter. See Fig. 8, Plate 2.

Fig. 2 is the method of finding the length and shape of the sides of a tin vessel which has splay or flare from bottom to top. Let A, B be the diameter of the bottom of the vessel and D, C the diameter of the top, and E, F the height; then B, G will be the width of the side and splay of the same. Produce the splay of the side to the perpendicular line, A, H. Place one point of the dividers on the line of the splay, H, B, at a point one-half the distance between H, B; extend the other point to G and describe the outer curve, which will be the top of the vessel. Close the dividers to B and describe the bottom edge. To find the length of the short and long side, apply Fig. 8, Plate 2.

Fig. 3 is the method of describing the form of a cant moulding to spring or curve around a circle. Let A represent the circle around which the moulding is to be sprung; B, the cant or splay of the moulding; C, the moulding in posi-

tion. Produce the quirks and fillets of the moulding to the diagonal line, D, E, which is obtained in the same manner as in Fig. 2. Then with one-half the diagonal line of the square as a center, describe the lines from D successively, which will be the form of the moulding and the face lines upon which to work it.

Figs. 4 and 5 show an end and side elevation of a groin arch, and Fig. 6 the ground plan, showing the method of getting the angle and jack ribs. Let A, B, C, D, on the ground plan, be the piers upon which the ribs are to rest; then D B, A C would be the plan of the angle ribs. Let A 2, D 2 be the spring of the end arch, draw the line, 2 3, to the center, then at right angles to D B from the center. Set off 3 4 the height of the circle, 2 7, and at right angles to D C; set off 6 the same height, then D 4, B 4 will be the points through which to describe the elliptic curve for the angle ribs, and D 6, C 6 the points for the side ribs, to make them all on the same plane of the end section, 2 7, to describe the ellipse. See Fig. 10, Plate 2.

## CONTRACTORS' ESTIMATES.

The estimates given below are made on the basis that all studding, joists, rafters, etc., are spaced 16 inches on centers and are given approximately. The nails are based upon Standard Wire Nails.

To every square of flooring or siding made from 6 inch stuff, add one-fifth for lap or matching, and for 4 inch stuff add one-fourth.

For shingles, count 900 to every square of roof, and lay  $4\frac{1}{2}$  inches to the weather.

### NAILS.

To make and finish one door or window frame, 1 lb.: to lay one square of flooring, 2 lbs.; to lay one square drop siding, 3 lbs.; to lay one square bevel siding,  $1\frac{1}{2}$  lbs.; to lay one square rough lumber,  $2\frac{1}{2}$  lbs.; to nail up 100 lineal feet of base, 1 lb.; to lay 1,000 shingles, 3 lbs.; to nail up 1,000 feet of dimension in frame,  $3\frac{1}{2}$  lbs.; to lay 100 yards of lath work, 5 lbs.

### BRICK WORK.

One and one-eighth barrels of lime and one yard of sand will lay 1,000 brick. One and one-fourth barrels of lime and one yard of sand will lay 100 feet of stone. One and one-fourth barrels of cement and one yard of sand will lay 100 cubic feet of stone.

### PLASTERING.

Four barrels of lime and  $1\frac{1}{2}$  yards of sand, with  $1\frac{1}{2}$  bushels of hair, will plaster 100 square yards, two coats. One-half barrel of plaster will hard finish 100 square yards of plaster.

### PAINT WORK.

One gallon of paint (white lead and oil) will paint 35 square yards of surface, two coats. One gallon of mineral paint will paint 2 squares of shingle roof, one coat. One gallon of good "hard oil" will finish 30 square yards of surface, two coats, over good wood filler.

## ARCHITECTURAL AND MECHANICAL TERMS.

**ALCOVE**—A recess or portion of a room separated by a partition of columns or curtained archway.

**AMPHITHEATER**—A building of oval or circular form, with the rows of seats rising higher as they recede from the front.

**ARCADE**—A range of apertures, or openings, in a building having arched heads.

**ARCH**—A part of a building supported at its extremities only, and concave towards the horizon.

**ARCHITRAVE**—The lower member of an entablature.

**ASTRAGAL**—A small moulding, semi-circular in form.

**ABUTMENT**—The junction or meeting point of timbers of which the fibers or grain of the wood extend perpendicular to the joint and those of the other parallel to it.

**BACK**—Usually that side of an object which is opposite to the face, or breast; but the back of a hand-rail is the upper side of it. That of a hip rafter is the upper edge of an angle rafter between two sides of a hipped roof, formed to an angle to be upon the same plane of the common rafter.

**BATTEN**—A piece of board from 2 to 4 inches wide and usually finished on the edges with either a bevel or ogee.

**BEAM**—A horizontal timber used to resist force, for example as a tie-beam, where it acts as a string or chain to prevent expansion.

**BEARER**—Any object used as a support for another.

**BEARING**—The distance in which a beam or rafter is suspended in the clear. If a piece of timber rests upon two opposite walls the span of the void is called the bearing, and not the whole length of the timber.

**BALCONY**—An open gallery, projecting from the wall of a building.

**BALUSTER**—A small column, belong to a balustrade.

**BALUSTRADE**—A range of balusters supporting a cornice or railing.

**BAND**—A square member in a combination of mouldings.

**BASE**—The lower division in a column. The same term is made use of in modern carpentry as applied to the finish next to the floor of a room.

**BAY WINDOW**—A window projecting from the outer wall of a building, forming two or more planes and not forming the segment of a circle.

**BED MOULDING**—In modern carpentry the moulding placed in the angle formed by the intersection of the planer and frieze.

**BELFRY**—The part of a steeple in which the bell is hung.

**BELVEDERE**—A turret or observatory on the top of a building commanding a view of the surroundings.

**BOW WINDOW**—A window forming the segment of a circle.

**BRACKET** (in Gothic architecture)—A projection to sustain a statue or other ornament. As applied in common carpentry, to support a cornice or other finish to the exterior of the building.

**BUTTRESS**—A projection on the exterior of the wall to strengthen the piers or sides of walls where pressure is greater than the mere wall of itself, as in case of arches, or a load resting upon the span of the void between two opposing walls.

**CAPITAL**—The upper division of a column or pillar.

**CANT MOULDING**—A beveled surface, neither perpendicular to the horizon nor to the vertical surface to which it is attached, as in the case of a sprung crown moulding.

**CAP**—The uppermost member of an assemblage of parts, as in a column or the finish of a door.

**COIN OR QUOIN**—The corner or angle made by the two surfaces of a stone or brick building, whether external or internal.

**COLLONADE**—A range of columns supporting an entablature, or upper portion of a building.

**COPING**—The stones laid on the top of a wall to defend it from injury.

**CORNICE**—A crowning; any moulded projection which crowns or finishes the part to which it is attached.

**CORRIDOR**—A gallery or passage in large buildings which leads to distant parts.

**CUPOLA**—The hemispherical summit of a building.

**DENTIL**—A small, square ornament, used particularly in the Ionic, Corinthian and Composite orders.

**DOVE**—A concave ceiling.

**DORMANT, OR DORMER WINDOW**—A window set upon the slope of a roof or spire.

**EAVES**—The margin or edge of a roof overhanging the walls.

**ENTABLATURE**—The horizontal part of an order, supported by columns.

**FACADE**—The face or front of a building.

**FASCIA**—A band or fillet; any flat member with a small projecture, as the band of an architrave. Also the ornamental projections from the walls of brick buildings over any of the windows except the uppermost projections, are called "Fascia."

**FILLET**—A square member or ornament; in modern carpentry the square member in a moulding. Also the spaces between the flutings of a column.

**FLUTINGS**—The vertical channels on the shafts of columns.

**FRIEZE**—That part of an entablature of a column which is between the architrave and cornice; as applied in common carpentry, the broad, vertical member of a cornice.

**GROIN**—The diagonal line formed by the intersection of two vaults in a roof.

**JAMBS**—The vertical sides of an aperture, as of doors, windows, etc.

**KEystone**—The center or highest stone in an arch.

**LANTERN**—A turret raised above the roof, with windows around the sides, and constructed for lighting an apartment beneath.

**LINTEL**—The horizontal piece which covers the opening of a door or window.

**MODILLION**—A projection in a cornice resembling a bracket.

**OGEE**—A moulding of two members; one concave, the other convex.

**PANEL**—A compartment enclosed by mouldings.

**PAVILION**—A kind of turret or building, contained under a single roof, either square or in the form of a dome.

**PEDESTAL**—A square body of stone or other material raised to sustain a column, statue, etc. The lowest part of an order of columns.

**PEDIMENT**—An ornament of a low triangular figure, crowning the front of a building.

**PIAZZA**—A portico, or covered walk, supported by arches.

**PLINTH**—The square solid under the base of a column, or wall.

**PORTICO**—An entablature supported by columns, and surmounted by a pediment.

**PORCH**—The kind of vestibule at the entrance of halls, churches, etc.

**PROSCENIUM**—In a theatre; the stage or the front of it.

**RISER**—A board set on edge under the foreside of a step of a stair.

**RAKE MOULDING**—A moulding which stands at an incline from the horizon, at any given angle.

## SHORT FORM SPECIFICATIONS.

General specifications and agreement for the erection and completion of a (state here class of building) for..... according to plans, details, etc., furnished by.....

### CONDITIONS.

Contractor shall provide, at his own cost, such labor and material as set forth under their respective heads, and as may be necessary for the erection

and completion of the building, according to plans and specifications.

The contractor will be required to give approved bond for the completion of the work.

Should any errors appear in the work, the contractor will be required to remove the same at his own expense and under the direction of the superintendent.

The contractor shall obtain all necessary permits for placing building material in the streets, for making connections with street sewers and water mains, and shall at all times maintain a proper and safe passageway.

#### DRAWINGS.

Plans, interlineations and figures are to be considered a part of, and illustrating this specification. In all cases the figures must be followed in preference to scale, and the larger details in preference to general plans. Any errors appearing in either plans or specifications must be at once referred to (architect or superintendent). It is hereby agreed that said work is to be under the supervision of..... Items appearing in the specifications and not on the plans, or *vice versa*, are to be executed same as if appearing in both.

The work will be specified under the following heads:

- |                    |                |
|--------------------|----------------|
| 1. Excavation.     | 6. Tin work.   |
| 2. Stone work.     | 7. Plastering. |
| 3. Brick work.     | 8. Plumbing.   |
| 4. Grading.        | 9. Hardware.   |
| 5. Carpenter work. | 10. Painting.  |

#### EXCAVATIONS.

Excavate for stone foundation, where shown on plans, to depths marked on sections. (Where no sectional detail is made specify number of feet below established grade line.) The excavations must be made wide enough to permit pointing of wall on outside after wall is up. All earth from excavations to be reserved for grading purposes.

#### STONE FOUNDATIONS.

Footings to be (specify width, for large, heavy buildings make of concrete: for light buildings lay large through stones in bottom of trench fitted to natural bed) width marked on plans. Carry up foundation walls, as per plans

and sections, to or above grade line, the walls from footings to grade line to be built of good, solid building stones, roughly squared and fitted to a solid bed. Walls above grade line to be..... courses of.....inches "pitch face" regular range (with or without tooled margin as the case may be), no stones to be less than .....inches in length. Openings in walls are to be arched, the centers being provided by carpenter. Centers must not be "struck" until the mortar or cement used in the arch is well set. The top of walls must be leveled.

#### BRICK WORK.

Brick walls are to be carried up as per plans and sections. They are to be built of hard burned brick, laid in..... mortar, well bonded, every sixth course to be a "header" course. No mortar joints to exceed.....in thickness, and to be struck smooth on inside and outside of wall. No pieces of broken brick will be allowed in walls. The work is to be plumbed every three feet in height. Set "back lintles" over openings, lintles to be furnished by carpenter. Carry up walls.....feet above line of roof and cope with..... All brick to be straight and square.

#### GRADING.

Grade space inside of foundation walls to grade line, "tamping" the dirt thoroughly around walls. Throw all surplus dirt outside, then with surplus dirt grade around building up to grade line marked on plans, forming a smooth and gradual grade.

#### CARPENTER WORK.

(Specify the carpenter work under the following heads in accordance with plans and details and the material to be used.)

Heights of stories, as marked on sections.

Centers and back lintles. Provide mason with proper centers and back lintles where the work is of brick or stone.

#### FOUNDATION FRAME.

Frame foundation of.....material sizes marked on details and sections. (Specify all dimension stuff under this head, giving grade, etc. Also the manner in which it is to be worked.)

**SHEATHING.**

Sheathing for frame to be.....planed to an even thickness. Put on.....(horizontally or diagonally), firmly nailed .....nails.

**SIDING.**

Exterior of house and where shown on elevation to be covered with..... (bevel or drop) siding.....wide, and to show.....inches to weather.

**ROOF.**

Roof to be framed of.....and as per plans and details. Sheathing to be..... covered with.....(shingles, tin or slate, giving quality), to show.....inches to weather. (If made of tin give grade and whether standing or flat seam, though this may appear under head of tin work.

**VERANDAS.**

Build verandas where marked on plans and as per details and sections. Columns to be.....roof to be.....steps to be.....

**GABLES.**

All gables to be finished as per plans and details.....

**DOOR AND WINDOW FRAMES.**

Door and window frames to be made of... ..and as per plans and details. Sizes marked on floor plans.

**FLOORS.**

Floors to be laid of.....well nailed with.....nails. All joists to be bridged with.....rows of 2x2. Angle bridging firmly nailed.

**WINDOWS.**

Windows to be size marked on plan, and to be..... (Give full description of window sash, glass, etc., and how they are to be trimmed and hung.)

**DOORS.**

Doors to be sizes marked on plans, hung on.....butts, trimmed with..... locks. All to be.....class doors. (Specify here all kinds of doors in building, and if there are rolling doors, how they are to be hung.

**INSIDE FINISH.**

Parlor, dining room, sitting room and front hall to be finished in.....kitchen and pantry.....wainscoted.....high. Second story rooms to be..... Bath room to be wainscoted.....high, all as per details.

**STAIRS.**

Build stairs where marked on plans. Front hall stairs to be made of.....and as per details. Service stairs of..... See details.

**HARDWARE.**

(Here specify kind of locks, butts, hangers, transom lifts, sash lifts, and locks to be used in different parts of building; also wall grates for foundation.)

**TIN WORK.**

(Here specify for all tin work, including deck, porches, valleys, gutters, down spouts and conductors, and whether work is to be soldered "flat seam" or standing seam.)

**LATHING AND PLASTERING.**

All interior walls to be lathed with .....and plastered.....coats of brown mortar, the first coat put on.....and the second.....finished with.....

**PAINTING.**

(Specify here the number of coats of paint, what they are to be made of and how put on.)

**PLUMBING.**

(Specify here bath room fixtures, including bath tub, wash bowl, flow and waste pipes, traps, etc. Also kitchen sink, steam and hot water fixtures.)

**FINALLY.**

All labor and material necessary for the full completion of the building according to plans and specifications are to be furnished. No alterations or extras will be allowed unless agreed upon in writing. On the completion of the work the contractor will be required to remove all debris, scaffolding, etc., from the premises, sweep out the building and leave it in good condition for occupancy, free from all mechanics' furnishers' liens. It is further understood that said.....shall be completed and ready for delivery by the.....day of.....

**BUILDER'S BOND.***Know all Men by these Presents :*

That we.....as principal and.....  
and.....as sureties are hereby held and  
firmly bound unto.....his heirs and  
executors, administrators and assigns,  
in the sum of.....(\$.....) Dollars, well  
and truly to be paid, in lawful currency  
of the United States of America: To  
the payment of which, well and truly  
to be made, we hereby jointly and sever-  
ally bind ourselves, our respective heirs,  
executors, administrators and assigns,  
firmly by these presents; sealed with  
our seals, and dated this.....day of.....

The condition of the above obligation  
is such that, whereas, the above bound-  
den.....has contracted and agreed,  
for a good and valuable consideration,  
to erect and complete a.....for the  
said.....owner, according to plans,  
specifications and details drawn, written  
and agreed upon by and between said  
.....owner, and.....contractor.

Now, therefore, if the said.....con-  
tractor shall, in the time set forth in  
the specifications, build and complete  
said.....according to plans and speci-  
fications, details, etc., therefor, as  
aforesaid, and shall, in all things there-  
in provided, perform said contract with  
said.....owner, or cause the same to be  
done, then in such events the foregoing  
shall cease and become and be wholly  
*null and void*; otherwise to be and  
remain in force, virtue and effect as  
therein provided.

In testimony whereof, we, the princi-  
pal and sureties aforesaid, do now, on  
this the.....day of.....set our hands  
and seals.

ATTEST : .....[SEAL.]  
.....[SEAL.]  
.....[SEAL.]

**PRIVATE CONTRACT BETWEEN OWNER  
AND CONTRACTOR.**

Contract and Mutual Agreement, by  
and between.....owner, and.....  
contractor, wherein the said contractor  
..... agrees to erect and complete a  
certain.....and other.....and per-  
form such labor and furnish such ma-  
terial as is duly set forth and covered  
by plans, specifications and details, the  
said.....contractor, giving approved  
bond in the penal sum of.....Dollars  
for the full performance of the same,  
and wherein the said.....owner,  
agrees to pay the said.....contractor,  
the sum of.....(\$.....) Dollars, advanc-  
ing (such sums as may be agreed upon).  
Provided, however, that the sum of.....  
Dollars shall be left unpaid until the  
work is complete and accepted by.....  
and it is fully shown that the same is  
free from all liens or encumbrances  
whatsoever. In witness whereof we  
have hereunto set our hands and seals,  
this the.....day of.....

WITNESS :  
.....Owner.  
.....Contractor.

## OTHER TOOLS, SUPPLIES AND MACHINERY.

There are many other lines of Tools, Supplies and Machinery that we handle, some of which are carried in stock, others furnished to order, still others we do not care to handle, but can often furnish our customers with information regarding them. Among them are:

### TOOLS AND SUPPLIES.

BICYCLE,  
BLACKSMITHS',  
BOILER MAKERS',  
BRASS FOUNDERS',  
DIE MAKERS',  
ELECTRICIANS',  
ELECTROTYPERS',  
ENGINEERS',  
FOUNDERS',  
ICE,  
JEWELERS',  
LEATHER,  
LINEMENS',  
LUMBERMENS',  
MACHINISTS',  
MOULDERS',  
PAVERS',  
PIANO MAKERS',  
PIPE FITTERS',  
PLUMBERS',  
PUMP MAKERS',  
SCREW CUTTING',  
TELEGRAPH,  
AND TINNERS'  
TOOLS AND SUPPLIES,  
ETC., ETC., ETC.

## MACHINERY.

BAKERS',  
BARREL,  
BOOK-BINDERS',  
BOX-MAKERS'  
BRAIDING,  
BRUSH-MAKERS',  
BUTTON,  
CANE-SPLITTING  
CANNING,  
CARPET,  
CARTRIDGE,  
CHOCOLATE  
CLOCK,  
COFFEE,  
COMB,  
CONFECTIONERS'  
CORDAGE,  
ELECTROTYPING,  
STEREOTYPING,  
EMBOSSING,  
GLUE,  
GUN,  
HOOK AND EYE,  
KNITTING,  
LEATHER,  
MATCH,  
MACARONI,  
NAIL AND TACK,  
PAINT,  
PAPER BAG,  
PAPER BOX,  
PAPER MILL,  
PIN,  
RIVET,  
ROPE,  
RUBBER,  
SHOE PEG, AND  
WIRE COVERING  
MACHINERY.











JUN 21 1939

